SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

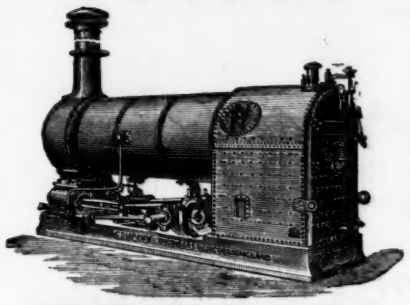
FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2194.—VOL. XLVII. LONDON, SATURDAY, SEPTEMBER 8, 1877. PRICE (WITH THE JOURNAL) SIXPENCE. PER ANNUM, BY POST, £1 4s.

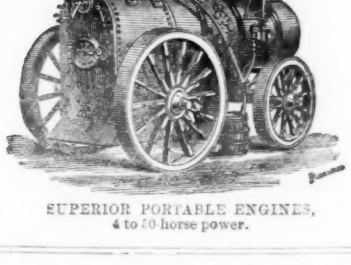
ROBEY & CO., ENGINEERS, LINCOLN,

SOLE MANUFACTURERS OF THE



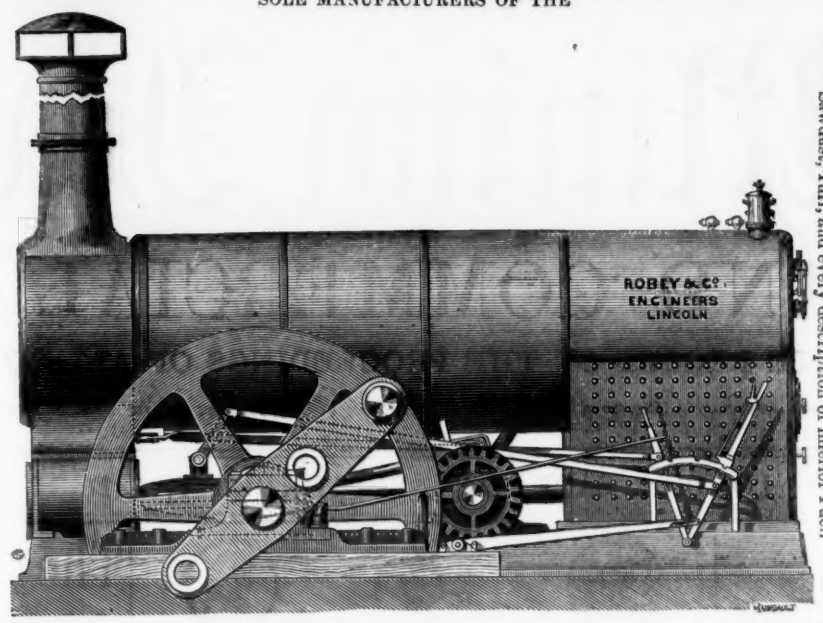
THE PATENT ROBEY FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED,
4 to 50-horse power.

VERTICAL STATIONARY STEAM ENGINE AND PATENT BOILER COMBINED,
2 to 12 horse power.



SUPERIOR PORTABLE ENGINES,
4 to 20 horse power.

No Expensive Brick Buildings or High Chimney required.



Boiler can be supplied with special Fire-box for Burning Wood, Sawdust, Turf, and every description of inferior Fuel.

PATENT IMPROVED ROBEY MINING ENGINE,

OF ALL SIZES, FROM 4 TO 50-HORSE POWER.

Some of the advantages of this New Engine are as follows:—
SMALL FIRST COST. SAVING OF TIME AND EXPENSE IN ERECTING. EASE, SAFETY, AND ECONOMY IN WORKING. GREAT SAVING IN FUEL.

This New Engine is free from all the objections that can be urged against using the Semi-Portable Engine for permanent work, because it possesses the rigidity and durability of the Horizontal Engine, and at the same time retains the advantages of the Semi-Portable in saving time and expense in fixing.

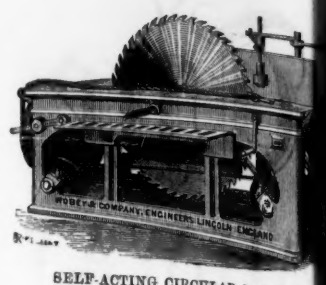
THE PATENT ROBEY FIXED ENGINE

(Also above illustrated) is admirably adapted for driving Rolling Mills, Saw Mills, Brick Machinery, Pumping Machinery, and all descriptions of Fixed Machinery.

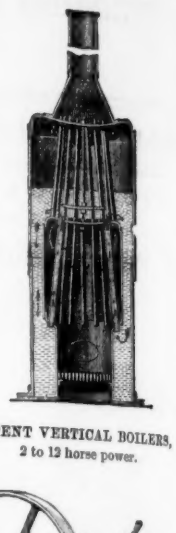
ENGINES UP TO 200 EFFECTIVE HORSE-POWER ALWAYS IN PROGRESS.

Prices and full particulars of all the Machinery here illustrated on application to the Sole Manufacturers,

ROBEY & CO.,
ENGINEERS, LINCOLN, ENGLAND.
London Office: 117, Cannon Street, London, E.C.



SELF-ACTING CIRCULAR SAW BENCH.



PATENT VERTICAL BOILERS,
2 to 12 horse power.

IMPROVED HORIZONTAL FIXED STEAM ENGINE,
4 to 60-horse Power.

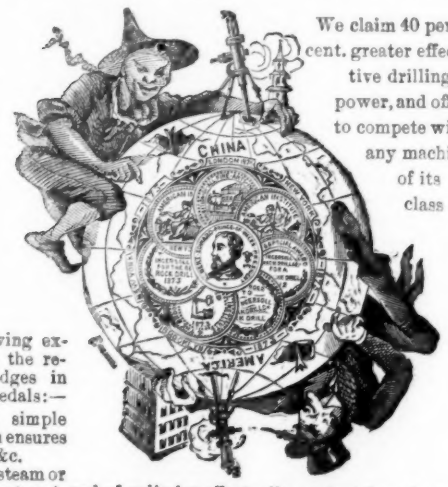
PATENT

"INGERSOLL ROCK DRILL,"

LE GROS, MAYNE, LEAVER, & CO.,

60, Queen Victoria Street, London, E.C.

5, PARK PLACE, NEW YORK, U.S.A.



We claim 40 per cent. greater effective drilling power, and offer to compete with any machine of its class

see following extracts from the reports of Judges in awarding Medals:—

"2. Its simple construction ensures durability, &c.

"4.—The steam or air cushions at each end of cylinder effectually protect from injury

"5. Its having an automatic feed, giving it a steady motion, &c.

"6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c.

"7. Its greater power is some FORTY PER CENT. in favour of the Ingersoll."

Medals awarded for several years in succession "For the reason that we adjudge it so important in its use and complete in its construction as to supplant every article previously used for accomplishing the same purpose."

Estimates given for Air Compressors and all kinds of Mining Machinery. Send for Illustrated Catalogues, Price Lists, Testimonials, &c., as above.

JOHN AND EDWIN WRIGHT,

PATENTEES.

(ESTABLISHED 1770.)

MANUFACTURERS OF EVERY DESCRIPTION OF IMPROVED

PATENT FLAT AND ROUND WIRE ROPE

from the very best quality of charcoal iron and steel wire.

PATENT FLAT AND ROUND HEMP ROPES,

SHIPS' RIGGING, SIGNAL AND FENCING STRAND, LIGHTNING CONDUCTORS, STEAM PLOUGH ROPES (made from Webster and Horsfalls patent steel wire), HEMP, FLAX, ENGINE YARN, COTTON WASTE, TARPAULING, OIL SHEETS, BRATTICE CLOTHS, &c.

UNIVERSE WORKS, MILLWALL, POPLAR, LONDON.
UNIVERSE WORKS, GARRISON STREET, BIRMINGHAM.
CITY OFFICE, No. 5, LEADENHALL STREET, LONDON, E.

THE "CHAMPION" ROCK BORER

STANDS UNRIVALLED

For Tunnels, Mines, Quarries, Harbour Works, Cutting Blocks of Granite, &c.

The working parts are made of the toughest steel and phosphor-bronze—steel castings are also used—as to combine strength with light weight.

AIR-COMPRESSING MACHINERY

Of the simplest and best construction.

Combined Water-pressure Engines and Air-compressors

Giving most excellent results.

ULLATHORNE AND CO., Mechanical and Consulting Engineers, 63, QUEEN VICTORIA STREET, LONDON, E.

Archer's New Patent Stone Breakers.

Sole Makers: DUNSTON ENGINE WORKS CO.,

GATESHEAD-UPON-TYNE, ENGLAND.

STONE BREAKER,

For Road Metal, &c.

Machines with combined Vertical Jaw and CUBING ROLLER.

Guaranteed to break more cubical and to make less small than any other Machine.

Simple Machines, with plain Vertical Jaws, without Roller.

PULVERISER,

For Crushing and Pulverising Rocks, Ores, Emery Stone, &c., &c.

Apply for prices and particulars to the Manufacturers, as above.

ARCHER'S PATENT BONE MILL—Sole Manufacturers.

MANUFACTURERS OF MARINE AND STATIONARY ENGINES; AND COLLIERY MACHINERY, CAGES, TUBS, &c., every description of MACHINERY USED IN CHEMICAL WORKS.

Original Correspondence.

ROCK-BORING MACHINERY—No. VI.

RECEIVER AND AIR PIPES.—The receiver and air pipes should be of sufficient capacity to annul the effects of the irregularity which might exist between the production and consumption of air; in other words, to run the boring machines steadily without much variation of pressure. The dimensions of the receiver, as well as the pipes, ought, therefore, to be in relative proportion to the number of machines to be worked, the cubic contents of air requisite for the machines within a given period, and to the charging power of the compressor. No exact rule can be laid down for determining the dimensions of the receiver, but if its capacity be eight or ten times more than the volume of air required per minute it will probably be sufficient. A large receiver and air pipes are desirable. The boring machines well supplied with air will not only deliver their blows more uniformly and with the desired effect, but the friction in passing air through such pipes from the receiver to the machine will become inconsiderable. The form of the receiver is a matter of small importance. An old boiler will serve the purpose. The receiver may be placed in any suitable position, near or distant from the compressor, and to stand vertically or lie horizontally on the ground. At the Friedrichsegen Mine, in the Lahnthal, the receiver, about 30 ft. high, is placed on its end, the relief valve being at the top, the water circulating pipe at the bottom. To render the receiver complete it should be furnished with relief and stop valves, and if in connection with a wet compressor a blow-off cock and a pipe for returning water to the compressor cylinders, unless fresh cold water is available for that purpose. In such case the receiver should be fitted with an automatic arrangement for discharging the water when it attains a given height within the vessel.

TABLE OF RECEIVERS.

Localities.	Compressors employed.	No. of compressors.	No. of receivers.	Total contents of receivers in cubic feet.	Pressure employed on rock borer per sq. inch.	Borers employed.
Mont Cenis	Sommeiller ..	8	14	28,000	90 lbs.	Sommeiller's
Vieille Montagne	Dry compressor ...	1	1	180	30	Sach's
Hoerdrick	Humboldt	2	3	740	60	Do.
Marchaye	Sommeiller	2	6	4,250	75	Dubois and François
Blandamp	Ditto	2	1	880	67½	Do.
Anzin	Ditto	2	2	1,450	45	Various
Blanzy	Sommeiller & Blanzy ...	4	—	—	45	Darlington and Blanzy
St. Gothard, Göschenen ...	Colladon	9	4	1,450	90	Ferroux, Dubois and François, McKean
Ditto, Airolo ...	Ditto	9	4	2,225	90	Darlington
Minera...	Darlington	2	1	200	50	Darlington

AIR PIPES.—Compressed air has to be conveyed in pipes from the receiver to the machines placed at various points underground; during this transmission a loss of work is occasioned by the friction of the air. The results of numerous experiments to determine the value of the loss thus occasioned show—1. That the resistance is directly as the length of the air main.—2. That it is directly as the square of the velocity of flow.—3. That it is inversely as the diameter of the pipe. The formulæ established from these results and confirmed show that for air pipes of the diameters usually employed, and under the distances prevalent in mines, the loss of motive force due to the friction of the air in the main is insignificant when the velocity does not exceed 4 ft. a second.

The pipes to form the permanent main from the receiver to the boring machines may be of cast or wrought-iron, but in either case they should be provided with faced and scored flanges. Cast-iron pipes are obtainable in 6 or 9 ft. lengths; wrought-iron pipes in 12, 14 or 16 ft. lengths. If wrought-iron pipes are to be used, cast-iron flanges may be screwed or soldered on the ends. Before the pipes are placed in position the interior surfaces should be well flushed with water, and swabbed in order to remove any loose sand or scab. To complete the operation the interior surfaces should be covered with a non-corrosive paint. The inside of many boring machine cylinders has been partially destroyed through neglect of these simple precautions. The pipe joints are readily and effectively made by means of a flat ring of vulcanised rubber. The expansion taking place in an air main is best taken up by means of a running joint, or by introducing a short bend of copper pipe. In the levels the pipes may be laid on the sole, or hung on the side towards the roof, the latter being a position frequently preferred. In some cases it will be useful to place one or more cocks on the main; one fixed at the commencement of the "advancing" or terminal pipe is almost necessary. The advancing pipe is in some instances formed of one pipe sliding within another, the inner one being drawn out as the workings advance; to the end of this piece is attached the flexible hose for connecting the permanent main with the boring machines.

When tunnels have to be driven a long distance, and time is of the greatest value, a reserve main is sometimes fixed to supply air to the borers during the period when additional pipes are being added to the principal or working main. In our metalliferous mines rock-boring machines will scarcely be required to operate at a greater distance than a mile from the seat of power, and as the number of machines will be more or less limited for some years to come, pipes of small diameter will suffice than if the air is to be conveyed a distance of three or four miles, as in the case of some tunnels already named. For the general main, pipes 3 in. to 4 in. diameter will be found large enough; for the secondary or branch part of the line, the diameter need not exceed 2½ in. to 3 in., whilst for branches from this part of the main, to connect a series of three or four borers, the diameter may be reduced to 2 in.:—

Diameter of air main. Railway Headings.	First part. Inches.	Second part. Inches.	Terminal part. Inches.	Flexible pipes. Inches.
Mont Cenis	8	—	4	2
Hoesac...	8	—	—	—
St. Gothard, Göschenen	8	4	2⅜	2⅜
St. Gothard, Airolo	8	8	4	2⅜
Musconetcong, New Jersey	6	6	—	—
Port Skewet	2	—	—	—
Festining	3½	—	—	—
Galleries and Mines.				
Anzin	4	4	2¾	2
Ronchamp	3½	—	2	2
Marshaye	3	—	2	2
Blanzy	6	2½	2	—
Vieille Montagne	4⅜	—	3	2
Friedrichsegen	2½	—	2½	2
Stahlberg	3½	—	2⅞	1½
Cwmbran, Newport	2*	—	—	—
Marbella	4	—	2	1½
Maesteg, Bridgend	4	—	—	—
Wheal Agar	3	—	3	1½
Minera	3	—	3	1½
Carn Brea	3	—	2	1
Ballacorkish	3	—	—	—
Foxdale	3½	—	—	1
Dolcoath	2	1½	1½	1
South Crofty	2	—	—	—
Moonta...	3	—	1½	1

* To be replaced by pipes 6 in. diameter.

WATER JET.—In boring holes, particularly deep ones, it is expedient to direct a jet of water to the bottom for the purpose of removing the sludge and sand, and preventing over heating and too rapid wear of the tool. A simple way of accomplishing this object in a shaft is to place a tank of water about 10 fms. from the bottom to carry the water down in ¾-in. gas piping, to attach to the end a piece of rubber tube, and to terminate it with a cock and nozzle piece. One of the workmen can then direct the nozzle to any hole, and instantly force from it the pounded stone. In a level where borers are mounted on a carriage, a small reservoir may be fixed on a trolly, and when charged with water brought into communication with the air main in such a way as to cause the water to be forced into any hole from a nozzle jet proceeding from the tank itself. When only a single borer is employed, and the holes are not deep, a rough syringe, made of gas piping, and a vessel of water, will suffice for enabling the workmen to render the holes clean during the boring operation. The rate of boring a dry and wet hole varies as 1 to 1·5—that is, it takes 1½ time as long to bore a hole dry as to drill a hole with the assistance of water. A plentiful supply of water will, therefore, during the boring operation not only quicken the rate of boring, but economise the use of compressed air to a proportionate extent.

RAILWAYS.—In the tunnel or main headings driven in Europe a single railway is generally laid for the borer carriage and wagons necessary for the removal of the debris. In one or two instances the borer carriage has been placed on a wide railway, and the stuff removed by means of wagons running on a narrower gauge line. The advance headings in Europe scarcely ever exceed a width of 8 feet. In America, however, the whole width of the railway tunnel is sometimes carried in the advance heading, which renders a double and spare line of rails necessary. In driving mine levels the gauge of the carriage rails may have to conform to the gauge of the wagon required for the removal of the stuff. If no special considerations were necessary other than to determine the best gauge for the borer carriage, the gauge might be fixed at 2½ to 3 ft., and the rails from 18 lbs. to 20 lbs. per yard. In long headings, and where boring carriages are employed, it may be desirable to cut side stalls at from 50 to 100 fms. apart for the lodgment of the carriage and boring machines during the blasting of the shot holes and the removal of the stuff:—

	Gauge of single railway laid in middle of level. Ft. in.	Width of advance heading. Ft. in.	Height of advance heading. Ft. in.	Area of heading in square feet. Ft. in.
Mont Cenis	3 3½	9 10	8 6	81 7
St. Gothard, Göschenen ...	3 3½	8 10	8 2	72 2
St. Airolo	3 3½	8 6	8 2	69 5
Vieille Montagne	4 0	7 4	7 4	53 9
St. Leonards	1 11½	6 7	6 7	43 4
Marehaye	1 7½	7 3	7 3	52 6
Ronchamp	2 1½	7 3	7 3	52 6
Anzin	1 11½	7 10	7 3	56 9
Friederichsegen...	2 0	7 0	7 0	49 0
Blanzy...	3 3½	7 0	7 0	49 0
Gothardbahn	3 3½	7 0	7 0	49 0
Marbella	2 0	7 0	5 0	35 0
Cwmbran	3 0	10 0	7 0	70 0
Maesteg	—	10 0	9 0	90 0
Musconetcong	4 0	27 0	8 0	216 0
Hoosac Tunnel	—	24 0	9 0	216 0
Portskewet...	1 8	8 0	8 0	64 0
Minera...	2 0	6 6	7 3	47 0
Drybrook	2 0	6 0	7 0	42 0

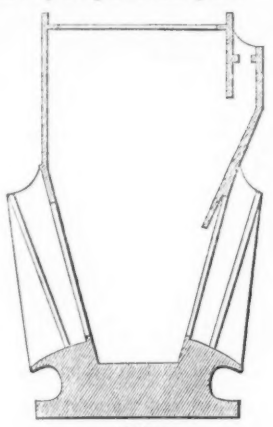
JOHN DARLINGTON.

CALIFORNIAN STAMPS.

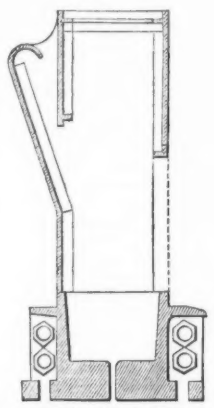
SIR,—The following particulars and illustrations relating to stamping mills constructed by the Union Ironworks, San Francisco, will prove of much value to the mining community of South Africa, Australia, New Zealand, and elsewhere. In Cornwall no stamps on the Californian model seem to have been erected.

The Cornish stamps are those described and shown in the pages of Agricola nearly 300 years ago, excepting perhaps the stems, which in some instances are now of bar-iron, square in section. The practice of Californian mill men is to erect heavy stamp heads, working at a high speed, with a short drop. It is alleged that such heads will reduce more stuff than an equivalent amount of power expended in running high stamp heads, at a low speed and high drop. Six heads in a mortar or kover, are preferred to three, the number usually included in a Cornish kover. The weight of a heavy head may be taken at 700 lbs.; medium drop of head, 10 in.; number of drops per minute for high speed, 90.

MORTARS.—Mortars are constructed so as to be adapted to the peculiar conditions of their use. The mortar for dry crushing is suitable for either gold or silver ore, while with wet crushing the gold mortar differs from that used for silver. When machinery is to be transported to locations which are inaccessible to wagons the mortars are made in sections, and fastened together permanently when they are put in their place.



MORTAR



SECTIONAL MORTAR

DRY MORTARS.—The dry mortar is illustrated in the accompanying cut, together with the "sectional mortar." In this pattern of mortar the die is set high, as in the wet mortar for gold. The screens are more inclined from the perpendicular than those of wet mortars, and there is a double discharge. The width of the bottom upon which the die is set is about 11 in. for a die 8 in. diameter, while the outside length is about 52 in.

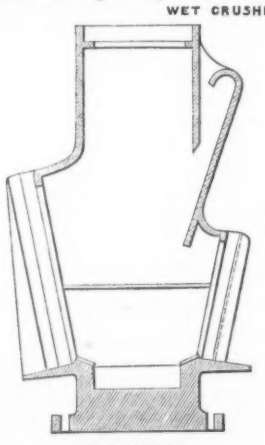
SECTIONAL MORTARS.—In the sectional mortar the upper part is made of boiler-plate, fastened at the corners by angle-iron. The bed is of cast-iron, in sections, cut transversely. A bar of wrought-iron is fitted into a groove planed in the bottom, with rivets holding it securely to the sections. This prevents any working of the sections sideways. The sections are firmly bolted together by strong bolts, turned to size, and driven after a reamer. This mortar when set up is very stiff and enduring.

WET CRUSHING MORTARS, GOLD AND SILVER.—The mortar for gold, used with wet crushing, is adapted to be lined with copper plate. The screen doors are also lined with copper, and the discharge is above the lining.

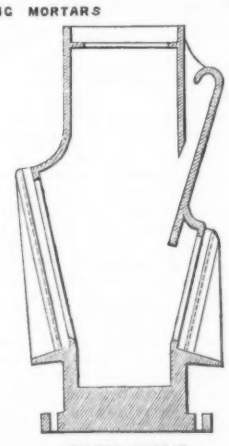
The general shape of the silver mortar for wet crushing is almost identically the same as the gold mortar. The die, however, sets lower, while the screens for which openings are made on each side are brought nearer to the middle line of the stamp, and have their whole surface available for discharge.

CAMS.—Cams are made as shown in the accompanying cut, either with one or two arms. The single-armed cam will permit greater

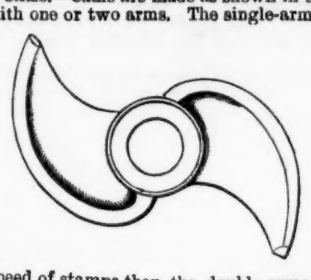
WET CRUSHING MORTARS



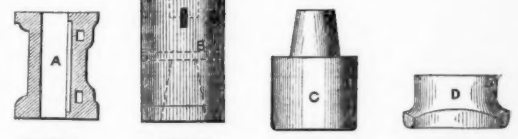
COLD MORTAR



SILVER MORTAR



speed of stamps than the double-armed cam. It will work up as high as 110 drops per minute. The majority of mills use double-armed cams, in order to avoid friction of the cap shaft, since they give two drops of the stem to every revolution of the shaft. The proper curve of the cam is a modified involute of a circle, the radius of which is equal to the horizontal distance between the centre of the cam shaft and the centre of the stamp stem. The modification of this curve consists in giving a sharper curvature than the involute near the end. This form of cam takes the weight of the stamp at the least practicable distance from the centre of the cam shaft, where the lifting motion is slow, and the concussion comparatively slight, and leaves it in such a way, on account of the quickened curve, so that the point of the cam shall not tear along the face of the tappet from a line through its centre to its outer edge or point of delivery. The outer end is shaped to conform to the edge of the tappet. It is proper to remark here, since the curve of the cam is determined by the distance between the centres of the cam shaft and the stem, that in the erection of the machinery this distance should be strictly adhered to, in order to insure the satisfactory working of the cam.



TAPPET SOCKET SHOE DIE

TAPPETS.—The tappet, or lifter as it is sometimes called, is secured upon the upper part of the stem, and forms a projection 2½ in. wide, under which the cam catches, and lifts the stamp. In the annexed cut, A is a vertical section of the tappet. It is made of cast-iron, and weighs from 60 to 70 lbs. It is alike at both ends, so that when one face becomes worn it can be reversed upon the stem. Formerly the tappets were attached to the stems by means of screw threads cut upon the latter, the tappet being screwed down as a nut upon a bolt; afterwards key seats were cut, to receive the transverse key, but these methods have been superseded by a much more simple and convenient device of a wrought-iron gib, set up against the stem by keys, which has received the name of "gib tappet." The tappet is cast with a rectangular recess in one side of the hole for the stem. Into this recess a "gib" is placed. This is a rectangular block of wrought-iron, flat on one side, but hollowed on the other, so as to fit the curvature of the stem. Two transverse slots, or openings, at the back of the recess are provided for keys or wedges, by which the "gib" is wedged tightly against the stem, so that the tappet is firmly secured at any desired angle. Thus no keyseat or change of the form of the stem is required, and the tappet can at any time be removed without difficulty, merely by driving out the keys.

SOCKETS.—The stamp-head or socket is cylindrical, and made of the toughest cast-iron, sometimes strengthened with wrought-iron bands at the top and bottom, shrunk on while hot. It is cast with two conical openings or sockets, one in each end, the upper one being for the reception of the tapered end of the stem, and the lower and larger opening for the shank of the shoe. Transverse rectangular openings, or keyways, are made through the socket at the bottom of each end opening. These are for the purpose of driving out the shoe or of detaching the socket from the stem, by inserting steel keys or wedges, which bear against the end of the stem or of the shoe, and when driven in separate the one from the other. With proper care the socket wears for years, and after being once attached to the stem need not be removed, but the shoe wears out in a few weeks.

SHOES AND DIES.—The form of the shoe is shown by C and the die by D. Both are cylindrical, and are cast of the hardest and toughest white iron. The shoes are usually 8 in. in diameter and 6 in. in height from the face to the shank. The dies correspond in diameter at the face, but they are often made with a broader face than the shoe. Their base is either a rectangular flange with the corners taken off or it is round throughout its whole length, and seated into a socket in the bottom of the mortar. The different parts of the stamp are generally disconnected when shipped, since their construction permits of their being united with ease when they are to be placed in the battery. In order to fasten on the tappet it is only necessary to slip it on the stem, and then wedge it fast by means of the gib and keys. To attach the stamp head to the stem the socket is placed upon the die in the mortar, and the stem is dropped into it. A few blows of a hammer upon the upper end of the stem will wedge it firmly into the socket, and it is made lighter by allowing it to drop, socket and all, upon the die. This is regarded as a permanent connection, but with the shoe the case is different, and to render it less difficult to remove this part when worn out, the shank before being inserted into the socket is covered with strips of pine about ¼ in. thick. These are held in place by a string while the shoe is placed in its proper position upon the die, and the stamp head is allowed to fall upon it. It thus becomes tightly wedged in the socket, and may be raised with it. After dropping a few times upon the die (protected by a bit of plank) it is driven "home," but there must be a little space left between the top of the shoe and the lower surface of the socket. A stamp thus put together with a 3-in. stem and a 200-lbs. socket will weigh about 620 lbs., the tappet weighing 70 lbs. and the shoe 95 lbs.

CAM SHAFT.—The cam shaft is usually made 4½ in. in diameter for five stamps, and sometimes 5 in. diameter for running ten stamps, with a bearing at each battery post. The pulley on its end is made of wood, built on flanges. The cams are keyed on by either one or two keys each.

GUIDES.—The guides in which the stamp stem is run are generally made of the finest wood that can well be obtained, and they are secured to the girts of the battery frame by collar-bolts between each two stems. They are constructed in halves, so that when worn by the stem they may be closed up to it by dressing down their faces.

THE SCREEN.—The screen for working ores by the wet process is made generally of Russian sheet-iron. This iron has a planished, glossy, and smooth surface; it should be free from rust or flaws, and be very soft and tough. The severest test of sheet-iron consists in hammering a part of the sheet into a concave form. In the manufacture of this kind of screen the sheet is perforated by punches,

varying in size from the number 0 to the number 10 common sewing needle. The screen for the working of ores dry is usually made of wire, and varies in fineness from 900 to 10,000 meshes to the square inch. X.

STAMPING MACHINERY.

SIR,—I have read with considerable interest the various letters in several recent numbers of the Journal on the above subject. The statement furnished by "X." in July last seemed rather contradictory, but upon investigation it appeared that the seeming contradictions were due solely to the various conditions of "grates" and "ore stamped." "M. P.'s" tabulated statement did not assist in clearing up the seeming discrepancies, but rather added to them, for he shows that all these dissimilar stamps with their varying weights, lifts, and quantities stamped, all took exactly the same power. Examination, however, soon showed the fallacy, and calculated upon the basis of No. 10, gave the following results. As regards the powers

In drawing up the accompanying table some further information was necessary, and this I have ventured to supply. This table shows that No. 8 has the highest velocity of head (75 ft. per minute) of the American stamps, and No. 8 also shows the best duty, though it has the lightest head (650 lbs.) No. 4, with a head 100 lbs. heavier, has less velocity, and though nearly the same power is required to drive it, and it uses a similar grate to that employed by No. 8, yet the quantity stamped is considerably less than that stamped by No. 8. This is no doubt partly due to the nature of the stuff stamped—hard quartz and brittle quartz; still it supports the theory that "quick acting stamps" do more duty than "slow acting ones" when each absorb the same power. And, furthermore, this theory is supported throughout by the accompanying table, when the grate question is taken into consideration. It is also an established fact that a given weight of stamp heads, when used with quick acting stamps, will stamp more than twice the quantity of stuff than when used with slow acting stamps, it necessarily follows that increased "weight of heads," with "increased velocity," will give a better result with a given power than if the same power be used with an increased number of slow acting stamps. The question of first cost is also greatly in favour of the quick stamps.

As regards No. 10 on "M.P.'s" list, we have (1) no size of "grates" given; (2), nor the material on which it worked; (3), nor are we informed over what period the result given was obtained. All these are very essential points, and especially so as regards (3), for a few hours' work can give no reliable data, and Messrs. Willoughby's letter seems to imply that no machine is now continuously at work. Still the Elephant flexible stamp has the merit of "velocity" (140 ft. per minute), and, therefore, has one element of success. Has it the other necessary elements? I fear without great improvements in machinery Cornish mining has but a very uphill game before it, and this necessity is happily forcing itself on the mining world, and on all hands the remedy for the want is being sought, and especially in dressing machinery.

No.	Number of drops per minute.	Weight of stamp heads in lbs.	Fall of stamp head in inches.	Velocity of stamp head per minute in ft. and in.	Horse-power per head.	Trade number of grates.	Quality of stuff stamped.	Formation.	Tons of rock stamped in 24 hours per head.	Horse-power required to stamp 100 tons.
1	95	750	7¼	Ft. in. 57 9	1·57	50	Soft	Limestone	1·10	142·72
2	87	750	7½	54 5	1·40	6	Soft	Limestone	1·57	89·17
3	95	750	8	63 4	1·70	50	Hard	Limestone	1·73	89·26
4	95	750	8	63 4	1·70	50	Hard	Quartz	1·60	106·25
5	85	750	8½	60 3	1·62	5	Medium	Quartz	2·25	72·00
6	85	750	9	63 9	1·73	6	Tough	Quartz	2·07	83·57
7	90	950	9	67 6	2·36	4	Easy	Quartz	2·65	89·05
8	90	650	10	75 0	1·76	5	Brittle	Quartz	2·85	61·75
9	70	650	11	64 2	1·81	6	Easy	Quartz	1·75	103·42
10	140	500	12	140 0	2·54	No	informa	tion	13·50	18·81

Cornwall, Sept. 4. S. H. F. COX.

STAMPING MACHINERY.

SIR,—Your correspondent, Mr. S. J. Moulton, like many others who take an interest in the development of machinery, naturally desires more consistent data than is afforded in the table of the American Stamps referred to in the Journal of July 28 and Aug. 18 before he can form any correct conclusions as to the amount of power respectively required to do a corresponding amount of work. In the tables you gave on July 28 it is merely stated that 1½-horse power is required to each stamp, and on that basis "M. P." forms his table; but as respects the Elephant Flexible Stamp the power required and the quantity stamped in the 24 hours is a matter to be tested by actual observation at Plymouth, where the machines are made.

The principle of hammering by means of flexible connections is of the oldest (to wit, the human arm and hand), and has of late been greatly developed in connection with forging iron and steel, and to a much larger extent in the finishing of textile fabrics in Great Britain, Ireland, Russia, Poland, and Sweden. Formerly the same kind of finish was produced by gravitation, and each machine or battery consisted of as many as 36 stamps, each stamp falling 10 in. to 12 in. 60 times per minute. Some finishers used as many as 150 batteries of 36 stamps each. The new machines not waiting on gravitation make 420 to 500 drops each minute, and the space occupied is as 144 ft. to 2250 ft.

Now, as to the practicability of passing the 13½ tons of stamped stuff through the grates in 24 hours. This may seem incredible to those accustomed to the slow speed of gravitation stamps, but an inspection of the Elephant stamp at work will make it quite intelligible.

1.—It will be seen that the flow of water and stamped stuff passing through its grates is unintermittent, and is not intermittent like the flow from the gravitation stamps.

2.—The quantity of water per ton of stuff required is not so great as in the case of gravitation stamps, consequently the material is more concentrated, and is not impeded by so much water in passing through the perforations.

3.—The two heads of the Elephant stamps have a much larger amount of grate area per head than can possibly be obtained in a battery of five heads of gravitation stamps.

Your correspondent looks to getting increased work by the use of stamps of increased weight—say, 900 lbs. The desired result is not so easily attained; such heavy stamps are liable to over-stamp the ore in the stuff, and to cause waste by sliming. In the Elephant stamp the effective blow can be increased at will by altering the speed, and the peculiar action of the spring by its instantaneous withdrawal of the head after it delivers the blow fractures the rock into grains without over-stamping or sliming. A quick and moderate weight of hammer is well known to fracture rock more effectually than a slow and heavy hammer. JOHN PATTERSON.

Inverness Terrace, Kensington Gardens, Sept. 5.

PRACTICAL MINING—STAMPING MACHINES.

SIR,—Having noticed in the Journal of July 28 valuable statistics relative to the performance of various stamping machines, with your permission I beg to add my quota of information on the subject. I quite agree with your correspondent that gravitation stamps are not the most effective, and I should say not the most economical when we look at the cost of erection and the large amount of material required to keep them in order, and the small results for the amount of coals consumed. True the old stamps may under exceptional circumstances be cheaply worked, as at West Basset, where the engine has a light load, and consequently the piston runs expansively, thereby effecting a saving of coals. Also at St. Ives Consols we could drive a given number of heads by a single-acting engine of 26-inch cylinder—52 heads of 750 lbs. when new, four 6-inch pumps from 4 to 7 fathoms long, one pulveriser, 20 round buddles, packing machine, &c. All this was accomplished by one 10-tons Cornish boiler, and 25 cwts. of good coals, stamping about 1000 tons per month of hard tinstuff. This engine was erected by Mr. George Eustice, of Hayle, in the year 1837, Mr. Eustice being a practical engineer of the old school. Having had a long experience in these matters I have years since come to the conclusion that a substitute must be found for the old stamps. This I think we have in Husband's improved one-head pneumatic stamps, and I am confirmed in this opinion by a trial of one of these machines, which I was empowered to purchase when I was in England in March last, and have since erected for Messrs. Heath, Symons, and Co. on the Elizabetha Gold Mines, in South Hungary. In the trial made we stamped 24 cwts. in one hour with one head. I will furnish you with statistics as we proceed. JAMES WILKINS,

Late Chief Mining Agent to the Servian Copper Company, Servia; now Managing Agent of the Elizabetha Gold Mines, South Hungary.

Oravicza, Banat, Hungary, Aug. 27.

MINING IN THE EAST—No. XX.

CONTACT DEPOSITS OF THE BANAT.

METALLIC MINES.—Besides the mines of iron oxides, so plentifully sprinkled along the junctions of the metamorphic limerock, a large number have long been worked for metallic ores immediately under these ferruginous cappings or gossans. The ores extracted during the last century and a-half have been chiefly those of lead, copper, and zinc—the two former of which contain a valuable percentage of silver, and sometimes a marketable fraction of gold. These minerals are found occasionally in distinct and very rich columns and nests, but oftener so intermixed that their reduction and the elimination of each metal from the resulting alloy is tedious and complicated.

It has been already remarked that the central lentile of limestone has been divided by the disruptive power of the syenite into two main masses, and that the continued action of the same agency has eroded in and about this fault, or rather crevasse, many large cavations, all equally packed with the grenatiferous gangues, which enclose the deposits of mineral matter. In the immediate vicinity of this crevasse the syenite has attained its greatest elevation, and has forcibly intruded its ramifications into the limerock; it is here, therefore, that the metallic ores have been profusely deposited in large and valuable masses, next the limestone.

The principal mines worked near this fault, which have an east and west strike, are, on the eastern end, Bleistock and Kiestock, both containing argentiferous ores of lead and copper; Simon Judas, a column of rich copper sulphide, and the three zinc mines of Carolina, Magdalena, and Angelina. At the western extremity are the mines of Mariahilf argentiferous copper pyrites, Juliana sulphide and carbonate of copper, Sveti-Archiganel copper, and Delius producing zinc and copper. These have been less or more worked at comparatively shallow depths, and all, as they approach the inferior limit of the lentile of limerock become impoverished, owing to the increasing dissemination of the ores in the gangue. It is somewhat remarkable that, though the ends of this fault have been so rich in ores, the central portion still remains unexplored.

It is but rarely that the whole width of any mineral column is equally valuable; on the contrary, it is ribboned like the lodes in many regular fissure districts, and the ores of the useful metals, especially those of copper, are commonly interbedded with ores of iron, &c., the low percentage of which leaves them worthless.

CAROLINA may be considered a type of the mines yielding zinc ores. It was very large at the surface, but wedged out in depth. It was worked languidly from 1805 to 1847, producing only 5500 tons of metallic zinc, which were reduced from the carbonates, silicates, and sulphates derived from the decomposition of galena.

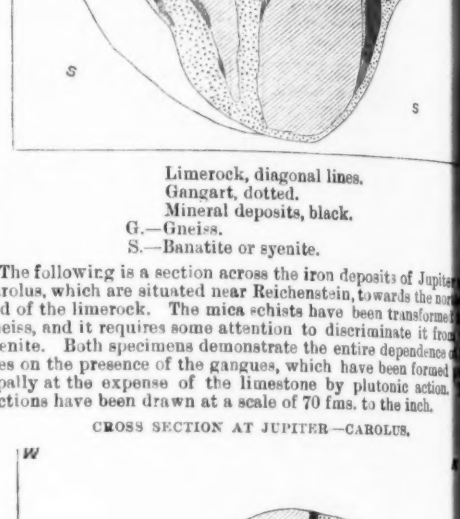
BLEISTOCK.—This mine illustrates the usual manner in which galena has been segregated in the hollows of the lime-rock. The ores were remarkably free from gangue, and required little or no dressing. Those ores found close to the limestone and ramifying in all directions into it were pure galena; but, removed from its contact, they became somewhat mixed with the gangue. The mine was opened in 1848, and produced 3000 tons of galena, averaging 50 per cent. of lead and 70 ozs. of silver to the ton. The inferior portion of the deposit was composed of oxides of copper, proceeding from the oxidation of cupreous pyrites.

SIMON JUDAS.—This was the richest and the most remarkable deposit in the whole district. Von Born, who wrote in 1770, has given in one of his contributions a most interesting description of this wonderful deposit of argentiferous copper. The mine was discovered in 1745, and worked continuously to 1784, giving in that time a net profit of three million florins. For many years previous to its diccovery shoadings and shallow workings had given strong indications of ores supposed to be silver. To decide the existence of ores in depth a company was formed, and in 1740 commenced operations; but for four years no success attended the exploration, and, the capital being at last exhausted, the representative of the shareholders was reduced to the direst distress. As the company were preparing to abandon the mine a small vein of rich copper pyrites was struck in pursuing a small cleft in the limerock; renewed efforts were made, and after breaking through a hard cap of the rock the deposit was found extending on all sides, and a few months sufficed to prove that a valuable and lasting mine would be opened. The stockwerk lay in a nearly vertical volute of the limerock which encircles it on three sides, and though only about 3 fms. in diameter in the concavity just below the back spreads out on every side, until at a small depth it has increased in width to 20 and in length to 26 fathoms. In the superior part the copper ores were unmixed with deads; but in the nether portions, where the gangue comes in from the fourth side, the ores become more and more impregnated with it until at the depth of 70 fathoms the ores were so impoverished that they could no longer realise the the cost of extraction. The ores composing the deposits were copper pyrites, copper glance, and buntkupferez, sometimes in distinct lentiles of no great size, but ordinarily much mixed together. In the backs the ores averaged 30 per cent. of copper, and contained 18·20 ozs. of silver to the ton of ore, but they gradually diminished to 2 per cent. in the bottoms.

So desirous were the shareholders to raise quantities of this rich sulphide with as little delay as possible that they allowed the growth of immense gunnises, which became exceedingly dangerous, threatening to crush together the vast balks of timber which kept them open. The mine was only saved by making a communication to surface and filling the hollows with attle. Like all mines situate in limerock, the sudden influx of water immediately after heavy rains renders the working of them difficult, and as nearly all stockwerke large stopes cannot be avoided, and these if not regularly filled either from the deads proceeding from neighbouring levels of explorations or from the surface burrows are liable in wet weather to crush together. This accident is not of such rare occurrence as might be imagined; during the past five years there have been two such catastrophes, and in both cases the mine was [illegible] tant date to extinction, as the States Railway Company indulge no galleries of exploration, but simply manage to keep the [illegible] languidly working, in order to continue in employment the [illegible] men who have been born on the soil, and who have built houses [illegible] acquired small holdings of land on the slopes of the mountain.

To give an idea of the general way in which the ores associate themselves with the limestone a section across the middle of the lentiform mass near the mines of Peter and Paul has been prepared. At this point it has been unbottomed by a level which passed through the crystalline schist, which the syenite had further metamorphosed into gneiss. The gneiss shades off into syenite.

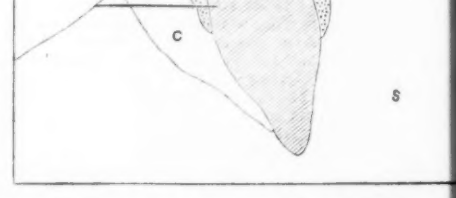
CROSS SECTION AT SIMON JUDAS MINE.



Limerock, diagonal lines.
Gangart, dotted.
Mineral deposits, black.
G.—Gneiss.
S.—Banatite or syenite.

The following is a section across the iron deposits of Jupiter [illegible] Carolus, which are situated near Reichenstein, towards the north [illegible] end of the limerock. The mica schists have been transformed [illegible] gneiss, and it requires some attention to discriminate it from [illegible] syenite. Both specimens demonstrate the entire dependence of [illegible] ores on the presence of the gangues, which have been formed [illegible] cipally at the expense of the limestone by plutonic action. [illegible] sections have been drawn at a scale of 70 fms. to the inch.

CROSS SECTION AT JUPITER—CAROLUS.



It is characteristic of the upheavals throughout Hungary and [illegible] key that the metals enclosed in the contact deposits due to its [illegible] tive action contain a varying though usually small fraction of [illegible] precious metals, and that even near the junctions of the syenite [illegible] other formations—*e.g.*, crystalline schists—the rocks are auriferous.

On reference to the plan of the Dognacska Mines in the last [illegible] two patches of mica-schist—very gneissose—may be remarked [illegible] lated in the midst of the syenite. On the junctions east, princi[illegible] at a place named Kracu-cu-auer, are numerous quartzose veins [illegible] closing a fair percentage of gold. The mines are, however, [illegible] advantageously situate near the summit of a high mountain [illegible] so distant from water, that the owner—a farmer at Roman Bo[illegible] —was unable to work them satisfactorily, and became discour[illegible] The lodes were parallel, from 1 to 4 ft. thick, and the gold ob[illegible] averaged about 6 dwts. to the ton, though rich places gave a [illegible] of 2 ozs. These veins have been followed lineally from 100 t[illegible] fathoms, and have been opened to a depth of about 30. The g[illegible] surface is free milling; but as depth is gained the matrix is [illegible] and more impregnated with mundic, the ferruginous tints gra[illegible] disappear, and most of the gold becoming imprisoned in the p[illegible] cannot be separated by ordinary milling. A further increa[illegible] depth brings in a large quantity of felspathic matter, which re[illegible] the quartz, and in all probability at a depth comparatively sh[illegible] the veins become unrecognisable. The mundic when dressed i[illegible] ficiently rich to be sold as auriferous pyrites. The average [illegible] of the ores raised, calculated from the actual amount of gold [illegible] was 15s. per ton. The gold contained 15 per cent. of silver. In [illegible] valley below these auriferous leads immense heaps of debris [illegible] tered over the whole length of the valley from the foot of [illegible] mountain to Roman Bocshan indicate the existence of ancient [illegible] washings, which have been attributed to the Romans. The [illegible] are numerous and extended, and consequently the amount of [illegible] milling quartz ores to be obtained at and near the surface ma[illegible] very large. There is ample water-power within a distance of [illegible] miles, and if a sufficient supply of ores of the value affirmed [illegible] be relied on the erection of effective reduction machinery [illegible] allow of the profitable working of the mines.

There are many places in the surrounding neighbourhood [illegible] have been mined for gold, such as Ezéres and Turluk; indeed, [illegible] district merits a closer examination for the ores of the pre[illegible] metals than it has yet received. EMPRESSA[illegible]

Maidanpek, Aug. 6.

PERU, AND THE SILVER MINES OF CERRO DE PASCO.

SIR,—The *Mining Journal* of last week contains some statem[illegible] reprinted from the Panama Star and Herald, concerning these [illegible] which cannot, in my opinion, be borne out by facts. In the [illegible] place, it likens this silver-bearing deposit to the "Comstock L[illegible] on a grander scale." This is an error, inasmuch as the mine[illegible] Cerro de Pasco are not in a lode at all, but are situated in a flat [illegible] of mineral rock, composed of gossan, iron, quartz, and pyrites, [illegible] deposit, which is exposed at surface, lays in a hollow or basin, [illegible] is from a half to three-quarters of a mile in diameter, surrou[illegible] chiefly by mountains of limestone and sandstone, and it has no [illegible] able inlet or outlet across these mountains. In some inst[illegible] however, where the mass abuts against the base and slopes of [illegible] hills, there are observable several small veins containing some [illegible] ore, but they bear no likeness whatever in composition to the

being ground herein referred to. Furthermore, these veins perish short distances in the limestone, and have no visible existence ond.

s further proof of its being only a horizontal accumulation or sit of lode stuff I beg to inform you that I was engaged by the contractors, Messrs. Wyman and Harrison, to superintend the ground drainage of these mines, together with sinking two of shafts 45 yards below the adit, which would give a depth of yards from surface. I proceeded to Peru with a company of for that purpose in December, 1869, and remained at Cerro de engaged in the work for nearly two years. While the work progressing I expressed an opinion to the effect that in sinking shafts they would in all probability pass through this mineral ation. The statement was contained in an article on these s, &c., written on the spot on February 24, 1871, and which did me the favour to publish in the Supplement to the *Mining rnal* on May 6 following. This opinion was subsequently veri- at the Gauricocha shaft. This shaft being in an extremely soft difficult ground for sinking the contractors sub-let it to myself, when it had reached a depth of 38 varas (yards) below adit it e upon a hard spotted kind of rock resembling gray porphyry. diately under this was a bed of silt, with loose fragments of s-worn limestone. It appeared to us as if the shaft had now ed the surface of a past epoch, and there was nothing in the ital which bore the slightest semblance to the huge mass of rallied rock reposing on it. W. R. RUTTER.

Melbourne, Sept. 6.

HYDRAULIC GOLD MINING—A SUGGESTION.

R,—It would be interesting to myself, and I doubt not to many of your readers, if someone of your correspondents—Mr. Sewell stance, or a gentleman like him well acquainted with the sub- —were to describe in detail the most approved modern method Hydraulic Gold Mining, and the separation of the metal from enveloping materials. ENQUIRER.

COLLIERY WORKING—THE SUSPENSION OF A MANAGER'S CERTIFICATE.

R,—I shall be glad if you will allow me space to draw the atten- of colliery managers to the precedent which has been established nection with the late enquiry ordered by the Home Secretary, ich you referred in a leading article in last week's Journal. result to the party against whom proceedings were taken is ently severe to cause me not to further allude to it.

e continued use of naked lights in collieries will assuredly end proceedings being taken of a much more severe character," re- d to by Mr. Kettle in his judgement. Take the case of a colliery is known as a safe one, the ventilation good, and from some er other a little gas is seen in some of the workings; it is ed away, and no trace of it can be discovered without anyone been hurt. The men are allowed to go to work as usual with d lights, and although a little gas is given off from time to time, not thought of sufficient consequence to order lamps to be put r, indeed, to report that gas has been seen in so small a quan- Eventually an accumulation of gas takes place sufficient to an explosion, and men may be either hurt or killed. What the manager's position be, then, if at the enquiry it comes out has been seen from time to time? In consequence, the fault g "not properly informing himself of the condition of the It is quite certain that managers are not able to provide a suf- current of air to dilute the gas so as to prevent the explosions all circumstances.

ot likely in the case referred to, and many others, no investiga- much less prosecution, would have taken place if the simple tion of adopting safety-lamps entirely had been carried out, principal of "prevention being better than cure." Supposing, ver, a manager had neglected his duty, and the Inspector of e were to visit him and find an unsatisfactory state of things, much better it would be for the manager even if a prosecution ome. There would be at least the satisfaction of knowing that consequence had resulted. I would not for a moment wish e understood that any relaxation of duty to render safe the should be the result of adopting lamps; or that they should ed as an actual necessity, but merely as an extra precaution. I had numbers of reasons given why lamps are objected to, and llowing are a few that occur to me at the moment:—

—We should have to pay so much per ton extra.

—They do not give light enough.

—If we provided lamps we should have to pay for them, whereas men find their own candles.

—We could not get the men to work with them.

—We have no gas in our pit, or so little that it is not worth king about.

—The men cannot clean the coal.

—The use of lamps would cause more loss of life by falls of roof,

—If my neighbours would only do so, I should be glad to follow. ecede so and so, and then I will follow suit.

—If lamps were adopted we should not be better off, because the would tamper with them.

the reasons given vanish in thin air, when after an accident it and obligatory to use them; and it is surprising how soon a d light pit becomes a lamp pit. If I have omitted any better ons, perhaps your correspondents will furnish them.

maintain that, on the ground of safety, policy, and economy, it mble that they should be used, and is proved by the increasing er of collieries that are doing so; that many of the reasons do ist except by custom, just as by custom you find in one district nd of lamp, and in another a different one. It is well known afety-lamps giving a light superior to a candle, that are five e more economical, and that cannot be tampered with, can be ed, and are used by the thousand.

conclusion, I would urge every manager who may be working pit with naked lights, or part lamps and part candles, seriously ugh the question in his own mind whether it is not much better on the safe side, and avoid "locking the stable after the horse has." PREVENTION.

COLLIERY MANAGERS' ASSOCIATION.

R,—Your correspondent "Viewer" appears to think that I desire cause discord in the projected Colliery Managers' Association even re it has come into existence. That was not my intention. If scientific portion of the institution is to be made subsidiary to benefit society portion I quite agree with all that "Viewer" has , but I understood the object was to elevate certificated ma- rs as a class, and I am convinced that a mixture of science, fit societies, and trade unionism will never reach that object. ine-tenths of our literary and scientific societies languish and not because the work they do is useless, but because incom- ent men obtain places in the management. A man who has re- ved sound scientific training, and has, moreover, had actual ex- nce in the profession to which he belongs, cannot, however h he may desire to do so, work harmoniously with another who together uneducated, and has, therefore, been unable to utilise experience he may have had—that is to say, upon the committee so called scientific society; hence internal discord and ultimate olution of the society.

he success of the Iron and Steel Institute, an association which pressed more rapidly than any established for many years past, due entirely to the great scientific knowledge of the council— Duke of Devonshire, Isaac Lowthian Bell, William Menelaus, ry Bessemer, and men of that class—which gave the outsiders the profession full confidence that there would really be some- ng to be learned from becoming members. I desired to see the e guarantee for success taken with regard to the Certificated agers' Association, and I repeat that a council of the quality re- ed cannot be formed by pricking promiscuously among the ers of certificates of service, which are but too well known to no guarantee for technical ability.

he Association is to be merely for benevolence and Trades ose purposes accept all who can be procured as members, whe- r ordinary or on the council, but if we are to have a society to which it will be an honour to belong we must have none but highly scientific and widely reputed men connected with the executive.

Sept. 4. MANAGER.

LIMITED LIABILITY.

SIR,—I ask the privilege of your columns to ventilate discussion on the actual result to the community of the law of Limited Liability. We are passing through a period which, since the advent of Free Trade in 1846, is without precedent in many staple trades as to its depression, and which may be termed for them the "Valley of the Shadow of Death." No doubt we shall in due time emerge from its gloomy shades, and come upon some enchanted ground of temporary and unusual prosperity; but while we are suffering we cannot help looking into the possible causes of that suffering, and weighing them in the scales of reason and common sense.

The general idea and bearing of the legislation that resulted in the Companies Act was to carry out freedom of trade. The idea was to add to the wealth of the community by enabling it to buy every product, raw or manufactured, at the lowest possible cost; also to provide, or allow to be freely provided, a form of investment for small savings. Previously the operations of trade and manufacture had been carried on upon a certain arbitrary rule with regard to liability. If A. and B. combined their capitals (say) of 5000*l.* each, or even smaller or more unequal amounts, each was liable to the full extent of whatever property he had, whether in or out of the co-partnership. It cannot be denied that under this system our manufactures had been wonderfully developed. When a special enactment was passed that servants and subordinates might receive in addition to their salaries a share in the profits without sharing the losses, a step was taken in the right direction. But "the trot became a gallop soon." The law next took an enormous stride towards what I will not call the freedom of capital, but its wild license. While A. and B., with enormous risks, were made liable to the fullest extent, and beyond the capital embarked in their business, C. D. F. and Co. down to Z., with their small investments and small losses under the most unfavourable circumstances, became a privileged class, and were not liable to lose more than their subscribed capital. Nay, more was yielded to them, for without paying that capital in to their partnership, they were empowered to borrow, sometimes upon the slenderest chance of repayment, from a public who often when lending adopt the Bible principle of giving—the left hand hardly knowing what the right hand doeth. Prosperity had come in 1870, 1871, and 1872, after years of dull trade. Old-fashioned and private firms had begun to make that unusual profit for a time which is necessary to recoup for long continued absence of profit, if not of loss.

Under such circumstances the Public Companies Act began to work. In certain staples whose products have a large but not by any means a limitless consumption, it was immediately put into operation. Whereas 50 works in one county had earned a moderate profit under careful management and on suitable sites, it was believed that 100 would have the same chance. Old works were bought up; worn out and worthless concerns weregalvanised. "I'm afloat, I'm afloat," was the song of triumph far and wide. Machinery was ordered of power and capacity enough in single counties to supply ten; boards of directors, with chairmen, secretaries, travellers, and clerks, came into existence, and the orders were given as to the 70 of old to go out and sell to every living creature; it might be said also without much consideration as to money and price.

To this complexion it has come at last under the Companies Act. The new companies formed under it spawned like mushrooms, and, as short lived, are losing all their capital by selling their sovereigns for 10s. or 15s. each; and the old-established concerns have no resource but, sooner or later, liquidation. But under what different circumstances. Look, Sir, at your columns, and note the real character as to fixity and responsibility of the constituents of a limited company. Their shareholders of to-day may cease to own a share to-morrow, and, like fish that is going bad, these may be passed or nominally sold to porters and office lads. The shares of the vast majority of these companies are the shuttlecocks of the market, tossed to and fro by the battledores of dealers. It is a complete delusion, under these circumstances, to suppose that the general public can be real gainers. Banks, railways, waterworks, tramways, and gasworks are no doubt somewhat under the same system, but how different in the conditions of success. The field is limited, the want certain, and the payment sure. But a trading or manufacturing concern is entirely different; personal responsibility forms their soul and strength. Look at the announcements, week after week, of the winding-up of these companies, and the waste of capital that is certain in the process. From ten to twenty is the weekly average. Look at the disclosures at the boards of these newSouth Sea schemes, or at their creditors' meetings. The law gives them so-called rights, but where are their duties? The public knows the names of the shareholders at certain periods in a limited bank. The profit and loss, and the detailed reports in connection therewith, of other public companies are known to them: but who can, without infinite trouble, find out these details with regard to so many of these limited liability companies? Be shareholders and you will know all, it is said. But it is not a fair condition.

If the Public Companies Act is to be defended on the ground of freedom of contract, I assert that on public grounds that freedom is constantly interfered with. Betting is a contract connected with a horse, but the law has plenty of fetters to bind it. Freedom of contract between buyers and seller is constantly controlled by law for the public health and benefit. As now carried on, the freedom of association in the form of "limited companies" has become license—a system leading to misrepresentation and fraud, and must ere long be curtailed. If nothing more is done than to make directors of these concerns liable as partners in private concerns, are, and as they are in the French system of *commandite*, that step should be taken. J. H. R

"COPPER MINING" AS AN INVESTMENT.

SIR,—Copper mining as a prosperous industry in the West has dwindled down to small dimensions; indeed, but for South Caradon a very old and prosperous veteran, we should have no mine of note to recognise, for Glasgow Caradon and West Tolgus can scarcely be called prizes, as neither up to this date have recouped the shareholders the original outlay, while in the case of West Tolgus the aggregate dividends amount only to 22*l.* 5*s.* a share, with 95*l.* 10*s.* called up. Since the discovery of Devon Great Consols, North Basset, West Basset, Buller, East Basset, Tolvadden, and the Alfred Consols, Cornwall has proved singularly barren in the discovery of paying copper mines. In fact all the shallow deposits appear to have been wrought out, and the gossans copping up nigh the surface explored and proven.

I gather from your last valuable Journal that the sale of copper ores from the Devon Great Consols, South Caradon, and seven other mines amounted to 2670 tons, containing 161 tons 19 cwts. of metal. The average price obtained was 3*l.* 2*s.* 6*d.* a ton for the ore and 51*l.* 10*s.* for the metal—8337*l.*; taking fine copper as being worth 74*l.* a ton, cake and ingot, the value of the copper to consumers is raised to 11,980*l.*, or 3643*l.* beyond the amount paid to the miner. The companies purchasing the 2674 tons of crude ores have to convey them to South Wales, smelt them, and then to bring the metal to market, paying all charges, including brokerage, agency, and risks incidental to commerce for 27*s.* per ton of ore. Thirty per cent. of the gross value of the fine copper gravitating into the pockets of smelters and merchants seems at first sight a heavy charge, but on reflection we are convinced that the miner can never expect the Welsh smelters and merchants to purchase 2670 tons of 6 per cent. copper ores at more than 70 per cent. of the market value of the pure metal, for carriage, smelting, and the several other charges and risks incidental to the business, and associated with the trade and commerce in the article must cost at least 20 per cent. We are led to refer to this subject from the constant abuse and reflections made by miners on the combined action and monopoly of smelters when, in fact, it is the paucity of the product both in bulk and quality that renders the copper mines of Cornwall a losing and profitless game to outside shareholders. There are no prizes to refresh the capitalist, hence money becomes invested in other districts where the ores are richer and deposited near the surface. From these causes it is likely that during the ensuing and coming year Cardiganshire will prove as rich and profitable in the yield of copper ores as her past and present history attest her position in respect to silver and lead.

At the Esgair-ffraith, one of the Cambrian Mines, a very rich and lengthened body of gossan has long been known to exist, but Welsh miners are more accustomed to lead than copper mining; consequently, little was known or even thought of this gossan until the present company purchased the property, and engaged the services of Capt. Thomas Glanville, of Cornwall, as the local manager. That gentleman had had practical experience in copper mining at North Basset and other profitable mines in Cornwall, and he at once detected the proximity of copper ores, and commenced to sink and open out upon the gossan. This operation soon proved a success in the discovery of a rich course of copper ore, averaging from 15 up to 25 per cent. of metal. If this discovery continues good and permanent under the extended deposit of gossan passed through at the adit level, and having regard also to the valuable courses of lead and silver-lead known to exist, all practicals predict a brilliant future for the Cambrian Mines. R. TREDINNICK,

Consulting and Advising Mining Engineer.

Exchange, 66, *Coleman-street, London, E.C., Sept.* 5.

LEAD AND LEAD MINING.

SIR,—The serious depression in the price of lead ore has taken the public by surprise, nor does the demand for lead justify smelters in thus crippling the miner. The effects on dividend properties are manifest—as, for instance, Leadhills are to be had at 5½; Roman Gravels, 9½ to 9½; Tankerville, 6½; West Chiverton, 12½; and others at proportionately low prices when compared with those prevailing a month ago. Investors would do well to turn their attention to these mines, and secure shares at an early date, as a reaction in favour of miners must inevitably soon follow. It is satisfactory to note the development of East Chiverton, Pateley Bridge, West Pateley Bridge, East Craven Moor, West Craven Moor, Monydd Gorddu, and Talybont. Among the more recently introduced companies the Hultafall will prove an unquestionable success, while Cwm Llanarch, in Carnarvonshire, is apparently sound to the core. It is taken up by Mr. Davis, of Great St. Helen's, a gentleman well known for his practical acquaintance with various branches of the mining industries of the country. There can be no doubt of his indomitable energy achieving success if rapid and economical development can secure it. The company is in 6500 shares of 2*l.* each, and the sett is traversed by the lodes of Llanrwst, Clementina, D'Eresby, and Aberllyn Mines. The property is close to the picturesque and admired valley and village of Bettws-y-Coed, watered by the never-failing River Conway. There is also a railway passing through the property, and the ores can be delivered at the station, half-a-mile distant. R. TREDINNICK,

Consulting and Advising Mining Engineer.

Exchange, 66, *Coleman-street, London, E.C.*

CARN BREA AND TINCROFT MINES.

SIR,—Although it is not pleasing to find that two mines which were regarded as occupying a strong position in the Dividend List are deeply in debt—Carn Brea to the extent of 28,201*l.* 10*s.* 8*d.*, and Tincroft to the extent of 15,592*l.* 1*s.* 7*d.*—yet there is some gratification in knowing the mines continue as encouraging as ever, and that the temporary adversity is due entirely to the unparallelled depression of the tin trade. In Carn Brea there are assets sufficient to cover the deficit and still leave the shareholders 3*l.* per share to the good; and in Tincroft there are also valuable assets which would go far to meet the liabilities even if they would not cover them altogether. There is another satisfactory feature, which is that those who have come in as new shareholders have paid so much lower a price for their shares that they have well covered themselves against the heavy liabilities now shown to exist.

But this is not the question at issue, and it is alike prejudicial to mining and to those concerned in it to endeavour to gloze over anything that is objectionable. The plain straightforward question is as to the accuracy or falsity of the accounts, and this should be answered without equivocation or mental reservation of any kind. If the accounts presented at the meetings on Friday were correct, and assuming that the 15,524*l.* for labour cost and 16,383*l.* 4*s.* 3*d.* due to merchants does not all represent liabilities incurred in the seven months, we are compelled to conclude that the accounts presented at previous meetings have been false, and those who falsified them may well congratulate themselves that they have escaped the degradation of hard labour as a penalty. Maudlin sentimentality in business is absurd, and I prefer a straightforward rogue—one who steals without blushing—to a man who, under the pretence of watching my interest, will stoop to do that for which many men have been punished as criminals.

Probably nothing has done so much to disgust capitalists with Cornish mining as the absence of reliance to be placed upon mine accounts. At the Carn Brea meeting Capt. Teague explained that as against the liabilities they had very valuable assets. There were at last 300 tons of tin lying in the stopes and passing through their hands; and taking that at existing prices, it would represent a money value of 11,250*l.*; there was copper ore sampled and awaiting sale next Thursday worth about 300*l.*, and the machinery and plant on the mine they had valued at 20,000*l.*, so that altogether they valued their assets at 31,550*l.*, or 3340*l.* in favour of the mine, supposing it was wound up at once. Although the balance now against them was, doubtless, a large one, he had not considered it necessary to take powers for making a call, because the mine was never in a better position for returning tin than it was at this moment. As the adventurers were aware, they commenced at the outset with returning about 130 tons in a quarter, but they had gone on increasing that amount until it had reached 250 or 260 tons, with every probability of its being increased still further. He was as confident that this would be so in the future as he had been that it would be so up to this time, so that he was in hopes that the large balance would be gradually wiped off out of the proceeds of the mine. Now, I admit that things might have been worse, but Capt. Teague's explanation cannot be regarded as an extenuating circumstance when the question of true or false accounts is under discussion.

The remarks of Mr. Heard were quite to the point. The French have a proverb to the effect that "opportunity makes the thief." The accumulation of bankers' charges has been concealed since 1873, and although it may sometimes be wise to lock up our secrets in our hearts, uniting with the act—"fidelity! fidelity!! fidelity!!!" I am always inclined to question fidelity in the absence of truth. Well, then, may Mr. Heard have said—"I hope this will be a lesson to us, as adventurers, to look occasionally into our own affairs. I have not the slightest doubt that this has been done with the very best intentions, but at the same time it would have been better for Captain Teague, for the adventurers, and for every Cornishman if those enormous charges had been brought up as they accrued every six months." Capt. Teague reiterated the assertion of his purity of motives and good intentions, and we must, therefore, find him "not guilty," at the same time requesting him and all others connected with the keeping of mine accounts not to do it again.

There was a very gratifying feature connected with both Carn Brea and Tincroft meetings—it has been determined to introduce machine boring. Capt. Teague states that with a rock-drill they are capable of opening up ground at least ten times as fast as could be accomplished by hand labour, while the cost was about the same The arrangement made was that the machine should be worked for six months. In the first level in which it was tried they calculated that it would take nearly six months to hole the ground which they were driving, from one point to another, but the machine did it in about seven weeks. He did not think the boring machine would be as valuable for sinking shafts as it was for driving levels, but the compressor would be equally valuable. Seeing the extent of the work for which the contract was offered, and also that after the 500 fms. were completed they would have to enter into another contract, it had struck him whether it was not advisable that they should purchase a machine of their own. He had spoken to Mr. Bolden on the subject, and that gentleman had promised to com-

municate with Mr. Basset, and to ask him whether he would assist in the cost of erecting the necessary machinery. Mr. Bolden himself spoke favourably of it, and went so far as to say that he believed Mr. Basset would render his assistance. The whole thing would involve an outlay of something like 4000*l.*, and he suggested the appointment of a committee to wait upon Mr. Basset or Mr. Bolden to ascertain his views upon the subject, for he was strongly of opinion that it was in every respect far better that they should do their own work than have to pay other people for doing it. In this opinion every real miner will heartily concur. T. W.

Truro, Sept. 4.

MINING IN CARDIGANSHIRE.

Sir,—It is most gratifying to be able to inform you that there is a good feeling now springing up for mining in Cardiganshire, and that the following mines are about being started by influential parties:—Tynant, where from the ore already discovered, and the situation and junction of the different veins in the grant, a small capital only is required to open out the mine, and bring it into a state of returns and profits. Cwn Erfin, near Goginan, which for a long period was very rich. This mine has an excellent field of machinery, and a small outlay in a few months will enable the incoming parties to open out a larger and a better mine than it has ever yet been. There are others also on the point of starting, of which more in a few days. Amongst the mines recently started the Cambrian Mines have been attended with a success that will greatly enhance the good feeling for mining before alluded to, and in this district it forms the general talk, more so than anything that has occurred since the opening the Van Mine. A few months has likewise placed Tynyfron in a condition, as far as reserves of ore are concerned, to pay very handsome profits for many years to come, the only requisite for so doing being suitable machinery, and which will have proper attention quickly. The River Rheidol will prove an everlasting and an abundant supply, and is brought into its proper position for driving water-wheels, drawing, dressing, crushing, &c.

Sept. 4. Miner.

MINING IN CARDIGANSHIRE.

Sir,—I was much pleased to find in last week's Journal the facts stated as to the richness of the Esgair-hir lode, and for which I can vouch as to its accuracy of being worth 280*l.* per fathom. Since the mines have been purchased by the present Cambrian Company they have made the following important discoveries. In the Esgair-ffraith, now down nearly 9 fms. under the 10 fm. level, and which was started to sink from the 10, the lode has improved from being worth 10*l.* to over 40*l.* per fathom. In a winze sinking under the 10, to the west of the Esgair-ffraith, and now down between 4 and 5 fms., the lode improved from being worth 5*l.* to 50*l.* per fathom. The lode 50 fms. west from this winze, in the 20 east from copper shaft, coming towards the winze, is worth for 4 ft. 15*l.* per fathom, and at the adit level, 70 fms. west of copper shaft, there is a course of ore discovered worth 20*l.* per cubic fathom. If you look at the distances and the richness of these courses of ore, the value of these discoveries will be at once apparent. All the great and rich courses of lead ore at Esgair-hir, on which many thousands of pounds have been expended, and also many years, in accomplishing the work of laying open the vast and rich courses of ore and coming under them, alluded to by "Vaughan," have not yet been touched. It is useless to speak more of a property which must so soon tell its own tale.

Next, the mine spoken of as having returned 32*l.* per share on an expenditure of 7*l.* is Cwm Erfin, and as the mine is now on the eve of being worked by a good company, there is no doubt of its proving everything that is stated by "Vaughan," and that a rare chance for laying out capital will be found here. This mine, like Goginan, was first taken up by my late brother Matthew, who, in conjunction with the late Mr. Jones, the then landed proprietor, worked it until the decease of the latter gentleman, and afterwards by a company. The facts stated by Mr. C. C. Marvin also are quite correct, and are calculated to do good to mining generally in this county, and we only want a few more letters of this sort to do an inestimable quantity of it.—*Goginan, Sept.* 3. Absalom Francis.

PENSTRUTHAL MINE.

Sir,—I called at Lanner yesterday, and learned that, owing to the miserably low price of tin, the company's agents, with a view to keep the mine going, have limited their works to tribute labour. When tin rises to, perhaps, 50*l.* per ton the agents will, no doubt, resume tutwork operations. I found that Capt. Teague, who holds a large interest in the mine (perhaps the largest of all the shareholders), gives his superintendence free of charge, which is a very considerate gift on his part. The sett is very large, and has numerous lodes, few of which have been extensively tried. There is room enough in the sett for working 200 years. The old mine, some persons think, should be re-worked, and sunk much deeper. I understand that the late company came down upon a great mass of mundic. That should be sunk through, to see whether underneath there is a rich course of copper ore, a circumstance highly probable; for the miners say that "mundic rides a good horse!" The account-house there, which 50 years ago was the scene of great carousals, is used by the company, and where, it is said, the agent, Capt. Polkinhorne, is to reside. The extravagance of the past generation is not indulged in by the present, the account-house expenses being generally very small. It may be that in some mines they have gone from one extreme to another. When North Roskear was at work, under the pursership of Mr. William Darke, he struck off pay-day dinners, which induced the agents to bring pasties for their dinners; but that restriction did not continue very long, because Mr. Darke died, and his successor was not quite so stingy. Tourist.

Sept. 5.

WHEAL GRENVILLE.

Sir,—Whatever the managing powers of this mine may think of themselves, the result thus far of their rule, and the statements and opinions from time to time expressed in the columns of your interesting and powerful Journal, are not calculated to impress the public with any great opinion as to their ability and success. Doubtless they have done their best, indifferent as that may be; but that a better upshot of their proceedings was expected no one can, I think, deny. Being at that time a shareholder in the mine, in December, 1875, I received a report of the committee, in which the discharge of the old agents was advised as absolutely necessary to ensure the future welfare of the company. The report further stated that from all the evidence which had been brought under the committee's notice "the conviction is forced upon them that in Wheal Grenville you have a really sound and valuable property, developed already to such an extent as to be capable, by the exercise of vigorous, and at the same time economical, management of being shortly brought into a remunerative position." The shareholders, as is well known, adopted the recommendation of the committee, and discharged all the old agents, appointing in their place a perfect stranger to the mine, but who, nevertheless, was considered so clever and competent that the shareholders were guaranteed that they would see a change for the better in no time. After this is it unfair to assert that the present management was bound to show an almost immediate beneficial result from the change they recommended? But they have not done so. Neither the prospects nor the market value of the mine have been enhanced in the slightest degree. Since December, 1875, about 18,000*l.* have been called up. What, then, becomes of the "economical management?" If erecting extensive machinery, with tin at 40*l.* per ton, is "economical management" I do not know the meaning of economy. If perpetual calls on the adventurers' purses are "vigorous management" the parties have been energetic indeed. If the old agents had brought the mine into such a satisfactory position as to be capable of being soon brought into a paying state, is it unreasonable to ask why those agents were discharged, and how it is that their successor or successors have not been able to bring about "the remunerative position" mentioned? This position looks distant enough in the present prospect, although the committee, when they assumed the reins of government, told the shareholders it was then a bright and near object in their picture of the future. Can anyone come to any other conclusion than that the parties who advised the discharge of the old agents have not shown the ability to avail themselves of the excellent state those agents had brought the mine into, as confirmed by the committee? And does it not strike one that the discharge of the old managers was both impolitic and unjust? Impolitic because it is only reasonable to assume that "the remunerative position" the present parties have not been able to realise might long since have been reached by former agents, who, having brought the mine up to a point verging upon success, were naturally the most competent men to realise the full result of their previous labours. The act was unjust, because the agents were sent adrift simply because the committee considered the welfare of the mine required it, and yet the committee testified (having fortified themselves with evidence on the point) that under the management of these very men the mine had been developed into a position bordering upon the profitable. The shareholders, doubtless, see something more serious than ludicrous in their own position, and well they may. But what is the situation of the ruling power that promised so much and has done so little? Strapping-Plate.

Pool, Sept. 4.

TRELEIGH WOOD MINE.

Sir,—Permit me to inform "Shareholder" that the recent improvements which took place just before Capt. Hosking ceased his management of the mine had been predicted by him. Let me acquaint "Shareholder" with the fact that Mr. Horsewill has been down here from Bedford United to make out the cost sheet, and Captain Goldsworthy, from the same mine, to consult and advise with the agent as to the mode of working. This may be economical on the part of Mr. Smith or Mr. Secretary—but who pays their expenses? Capt. Hosking can enlighten the shareholders if called to the next meeting. The shareholders, small or large, should visit the mine and see for themselves.—*Treleigh, Sept.* 5. Ex-Shareholder.

TRELEIGH WOOD MINE.

Sir,—"Shareholder," writing in last week's Journal, is undoubtedly grieved at the change of management in this mine, and I suggest his communicating with the secretary, who might give him all particulars regarding it. One must not be led into a fever by reports that emanate from hearsays, notwithstanding great comment was made on the change, and various rumours in circulation—one in particular, which alluded to some salted samples (I cannot call to my memory the phrase used by miners)—yet I suppose Mr. Smith, whom "Shareholder" says is the largest shareholder, knows who was the most likely person to guard and look after his interest. It is needless to comment on this now; the time is past—the change is made; how it originated I cannot give an opinion, and will, therefore, drop the subject, and leave "Shareholder" to watch his own interest. A Constant Reader.

PROFITABLE INVESTMENTS.

Sir,—Your readers will surely now allow that my writings of the past were not so much at random respecting the Queen and Virtuous Lady Mines; at least the present unprecedented success of the Queen, now known as Wheal Newton, confirms all my statements, which are, indeed, somewhat supplemented by the actual fact of 1000*l.* worth of silver having been lately broken underground and raised to the surface in one day. Rumour says the Virtuous Lady has fallen into the hands of the same spirited proprietary, and I maintain, as of yore, that valuable as the Queen has proved itself to be—in fact, it is at present without exception the most profitable mine in England—the Virtuous Lady will in the course of some extensive explorations reveal twenty times the wealth, both as regards silver and copper, the ancients having worked the Virtuous Lady Mine for silver, and Dr. Phipson's assays of the poorest material prove its worth. Unfortunately, I do not possess a single share in either property, and, therefore even my bitterest enemies—if I have any—may at least give me credit for writing disinterestedly and dispassionately. It is not particularly refreshing to sow the seeds and behold others reaping the rich harvest—but such is life! Mining has done little enough for me, although for years by night and day, by brain and body, have I striven to espouse it as a legitimate undertaking; and even now, when bidding it farewell for a season, maintain that by the aid of science and improvement to operate upon low-class ores, the sting of speculation and ruin may yet be removed, bringing it more within the category of an investment, with its occasional rich deposits of minerals to act as bonuses. Benevolence teaches us to speak of the bridge as it carries us safely over, and considering the whole affair has to me personally tottered to its very fall, and almost broken my heart as well as back, perhaps the credentials now gratuitously proferred are every whit as much as the object deserves. Others may succeed, but I could never induce mining to give me 21s. for 20s. of my own or anybody else's money, and yet when at last, against the grain, compelled to show the white feather, by commencing a strictly mercantile pursuit, the first month's operations yield a net revenue upon capital invested at the rate of 115 per cent. per annum. I am now forming a syndicate to provide the necessary capital to extend this grand and profitable undertaking (which supplies a world-wide want) throughout the United Kingdom. Thos. J. Barnard.

Bishopsgate street, London, Sept. 5.

THE LATE MR. ENNOR.

Sir,—By the demise of Mr. Nicholas Ennor your readers have missed an eccentric correspondent. His contributions used to cause a high degree of amusement to many of your readers. It was the great conceit he had of his own powers running through all his letters which so amused people. I never knew a writer so devoid of modesty. He would persist in calling the real geologists and mineralogists ignorant "unpracticals." He would not credit a man for any knowledge of mining or of mineralogy who had not actually worked for some considerable time underground. His dogmatism was excessive; everything which he alleged should be taken as unquestionable truth; to controvert it was to incur his hot displeasure, and he was not very choice in the language in which he expressed his feelings. He would labour hard to induce the scientists to dispute with him, and if he did succeed in bringing an antagonist into the arena to dispute his conclusions, or assumed facts, he would never admit his error, however clearly established, and when he found himself unable to refute his opponents he would resort to irrelevant interrogations, which neither himself or anybody else could answer thoroughly. His observations were, no doubt, very extensive, and he knew many phenomena of the lodes, &c., but his insufferable conceit spoiled all. He wrote much for the Journal, but I am not aware that the mining community profited much, if anything, from his contributions. Tourist.

Sept. 5.

HEAVY PREMIUM FOR MINES.

Sir,—A large amount of odium has been unfairly attached to mining. It has been said by some that mining is a bad speculation. I deny that proposition. When capital is judiciously applied in mining a fair interest on a long run can be obtained. But if people will indiscriminately lay out their money it is not surprising that they lose it, as they deserve to do. What brings mining into disrepute is the shameful charge often made for promotion of the mine. In the case of Penstruthal 50,000*l.* was charged for the mine, which cost the promoters only a few pounds. In Cathedral 10,000*l.* was charged. In Penhall, in Perranzabuloe, about 8000*l.*, and in the Phœnix, a lead mine in the same parish, 10,000*l.* was also charged. These two last-mentioned sums were obtained by the same person, who is said to have charged at least 10,000*l.* for another mine. All these were "limited" mines, and where the capital paid-up was chiefly absorbed by the charges referred to. Some promoters care nothing about the mine after the receipt of the promotion money. In Cathedral the paid-up capital was 15,000*l.*; 10,000*l.* promotion money left 5000*l.* for working the mine. It is no wonder that the mine came to grief as did Penhall and Phœnix. All these failures are calculated to and do bring discredit to mining in Cornwall, which does not fairly belong to it. I do not object to a fair charge for a mine sett of good promise, nor to the payment of even 10,000*l.* for a mine obviously worth the money, but t that sum for a thing purely speculative is preposterous. I that capitalists will hereafter see that what they purchase legitimate property, and not as sometimes a thing presented trap to take in the unwary. John Bunt.

MINES WITH SEVERAL ALIASES.

Sir,—I am tolerably conversant with Cornish mines in a graphical sense, but am sometimes nonplussed by the appearan fresh names, which obliges me, in order to keep up my know of the situations of mines, to enquire where they are. I soon that the name is a surname or an alias, and that the mine ha well known previously under another or other names succes Gwinear Consols was the name first given to a mine near W Gwinear; afterwards it was called Vyvyan Consols, after was worked under the name of West Rosewarne United, and now working under a name which at the present moment I recollect. There is a little mine near Beripper, the last ta which was West Dolcoath, but it had other names previou original one being Wheal Triumph. The mine called New D was Camborne Vean. Wheal Rome, in Camborne, is now Roskear. New Consols was called Wheal Martha, and after by another name before New Consols. South Roskear was fir is now worked under that name, but it was called Pendarve sols under Capt. T. Richards' management; and Wheal Well (Camborne) was worked by him under the name of Gustavus West Treavean was Bell Mine. St. Day United was and is P Mine. Most of the mines have changed names. Reade

[For remainder of Original Correspondence, see to-day's Journal.]

Meetings of Public Companies.

ARGENTINE COMPANY.

An extraordinary general meeting of shareholders was held offices of the company, London Wall, on Thursday,

Mr. S. Lloyd Foster in the chair.

This meeting was called for the purpose of passing certain lutions relative to increasing the capital of the company. T tice calling the meeting was read by Mr. John E. Dawson (t naging director).

The Chairman said it would not be necessary to detain the ing long on the present occasion. At the last meeting, h Aug. 21, an objection was taken to the wording of the notice meeting. Therefore, in order that the matter might be put i strictest legal form the present meeting had been called. The circumstances of the company had been fully placed befor shareholders, and the only subject to which he would advert w latest information which had been received from the mine, was of a very satisfactory nature, and which he would as Dawson to read.

Mr. Dawson then read extracts from a letter from Capt. C dated July 12, 1877, which appeared in last week's Journal. read the following letter which had been received from Dr. Orl

"My son, in closing his letter, says:—'The calciner is working better t to-day, and is just beginning to show its value.' The improvement appe attributable partly to having reduced the number of shelves from twelv He says:—'At the present rate of working the tube will pass 18 to 20 tons of in the 24 hours.' He has had much trouble in drilling the men into the use of some difficulty in the use of wood instead of coal as fuel, nevertheless he to be satisfied with the progress made. He says:—'I am using from 2 cent. of salt, which will make the cost about 3s. per ton. This is on ore w says when calcined 3¼ ozs. of gold and 3¼ ozs. silver;' also, 'if the calci be supplied with dry ore, good fuel, and have proper attention from the w by night as well as by day, the yield for July should be over 300 ozs.'"

On the motion of the Chairman, seconded by Mr. George ters, the following resolutions were unanimously adopted:—

1.—"That the capital of the company be increased from 80,000*l.* to 100,0 the creation of 4000 new shares of 5*l.* each, to be issued by the directors fr to time, in such numbers and proportions, and either at par or at previ discount, and generally under and subject to such conditions, privileges, or tages, and such stipulations as to payment, either in cash or by conversio bentures into shares of the said company, or otherwise as the directors sh fit, and free from any obligation to issue the same rateably under the te provisions of Article 35 of the Articles of Association, or any other of the said relating to the issue of further capital.

2.—"That for the purpose of consolidating the liabilities incurred a incurred on capital account into one debt, the terms of the foregoing re be applied, and be deemed to apply, to the capital created by the special re passed at the general meeting held on March 7, 1877, in respect not only 4685*l.* already thereunder, but also of the unissued capital created by th tion passed at the said meeting."

3.—"That in accordance with Article 77 of the Articles of Associati moneys to be raised under or in pursuance of the foregoing resolutions, passed at the meeting on March 7, 1877, be raised on the terms that the deb or other obligations representing the same may be converted into share company, either at a premium, at par, or at a discount, and that the dire empowered to carry such arrangement into effect."

The meeting then separated.

LADYWELL MINING COMPANY.

An ordinary general meeting of shareholders was held at th pany's offices, St. Helen's-place, on Thursday,

Dr. Brookes in the chair.

The notice convening the meeting was read, and the report directors and Capt. A. Waters were taken as read. The ac showed a loss on the 12 months' working of 1548*l.* 1s. 8d., cash balance of 2042*l.* 19s. 2d.

The directors reported that in compliance with the special resolution p an extraordinary general meeting, held on Aug. 3, 1876, and confirmed subsequent meeting, they offered to the shareholders the 12,000 Ten per Cent. ence shares of 1*l.* each then created. Of these shares 7320 have been taken the calls thereon of 10s. per share have been paid, producing 3660*l.*, less 5 arrears on the second instalment. Since the last account 170 tons of lead c been sold, realising 2160*l.*, and during the same period the expenditu labour, materials, management, royalty, London expenses, &c., has amou 3720*l.* 2s. 11d., leaving unexpended the sum of 2042*l.* 19s. 2d. In addition amount the two uncalled instalments of 5s. each on the 7320 shares would 3660*l.* The directors have no intention of making these calls unless needed for the development of the mine, as they believe that the assets hand (supplemented by the proceeds of lead ore raised during the worki suffice for a considerable time.

Capt. Arthur Waters reported upon the various points of operation engine for winding out of the Nos. 1 and 2 shafts is at Minsterley, and wi place before it is really required for working purposes. To make this c would add that until they have made a communication with the adit t quantity of stuff broken daily in the shaft would not keep the engine one hour a day, the depth being considered, and the upshot is that they ca meantime wind cheaper by hand. He would remark, in conclusion, th prospects are of the most cheering character, and if they do not find a go here he will be much surprised and disappointed.

The Chairman was glad to be able to observe that their p had certainly improved since the last meeting. Many of t ference shares have been taken up, and since then the mine ha menced making regular and satisfactory returns, and these hoped not only to continue but to increase. In their farthe however, the air was so foul that little could be done in t they got the air-shaft down, which he was happy to say would shortly be completed. He hoped when they met again the c would be able to make a still more satisfactory report tha now presented. He would, however, as he was present give full information as to the progress making at the mine, and also tell them what was being done in the more southerly p of the sett, which was looking very favourable.

Capt. Waters said that as to the adit end, the air was s that they had not been able to get a light in for the last three It was now driven 208 fms. south of the shaft, and they had ground the whole distance, sometimes bunches, and sometim lode was pinched, but it was never lost. He hoped that it become more regular in depth, as that was the change which always occurred in the mines of the Shropshire district, and ground was precisely similar to that which had been found the mines in the neighbourhood. From the No. 3 shaft up t shale there was about 70 fms., and as they got nearer the shal expected better lead. They had a splendid lode in the No. 3 all of which would come away as soon as they were in a posit improved ventilation to work it. The No. 2 shaft is all i carbonate of lead, and the rocks were similar to and p with the deposits in Roman Gravels. In the lowest level th good clinkers of ore. They had three lodes within 5 fms. of

, but whether they came together or continued parallel, which
d be so much the more advantageous, he could not at present
It would take them about three months to get down the air-
to the adit level which he had referred to as being impeded
ul air, and they could get out twice the quautity, and in much
time, as at the present it takes one man to keep the light for
ther to work by.
Scott enquired when additional returns might be anticipated,
whether the quantity sold would then be fully double the pre-
sales.——Capt. Waters said that in about three months, when
got the air-shaft down to the lode, he believed they would
their sales, which, indeed, would not be very much to do, but
uld not like to promise, less they might tell him that he had
pointed them.
SHAREHOLDER observed that they only sold 20 tons in two
ths, as far as he could see.
Wilson said that since April 6 they had sold every month,
rcel being sometimes 20 tons, and sometimes 30 tons. He
mention that they were getting 4*l.* per ton less for their lead
they were seven months ago; and that the war, instead of send-
p the price, as had been anticipated, had actually had a de-
ing effect.
The CHAIRMAN said that the information given by the captain
ery interesting and satisfactory, and he could himself bear out
he said as to the south end. Twenty years ago they were
n to get possession of this mine for Roman Gravels, so that
would readily understand that he had always full confidence
mine. He then moved that the reports and accounts be re-
d and adopted.——Mr. Greame seconded the resolution, which
t to the meeting, and carried unanimously.
on the re-election of Messrs. Dunn and George De Courcy Peele
proposed, Messrs. Scott, Walter, and Reed proposed amend-
that the number of directors be reduced to three with a view
omy.
The CHAIRMAN explained that as the Articles of Association fixed
gregate remuneration for the board the reduction of number
effect no saving, and would, moreover, be inconvenient. He,
ver, put the amendments, which were simple negatives, to the
ng, and they were lost, the original motions being then carried.
The CHAIRMAN explained that if alteration of remuneration to the
rs (250*l.* per annum in all until dividend is declared and 500*l.*
ards) was desired the proper course would be to call special
gs to alter the Articles of Association.
WILSON, in reply to an observation of a SHAREHOLDER,
that the board to whom reference was made as being vendors
ired, so that the remarks did not apply.
proceedings terminated with the usual complimentary vote
nks.

SOUTH CONDURROW MINING COMPANY.

general meeting of shareholders was held at the company's
, Austinfriars, on Weduesday,

Mr. H. J. MARSHALL in the chair.

JAMES HICKEY (the secretary) read the notice convening the
g, and the minutes of the preceding one, which were con-
. The statement of accounts for the 16 weeks showed a total
diture of 6478*l.* 8s. 11d., whilst the aggregate receipts were
12s. 7d., leaving a balance—being profit on the 16 weeks' work-
f 1991*l.* 3s. 8d. The credit balance at the previous meeting
2727*l.* 0s. 9d., out of which a dividend of 1836*l.* 18s. was de-
, leaving 1890*l.* 2s. 9d. to bring forward; and this, added to
sent profit, made the available balance of 3881*l.* 6s. 5d. The
ities were absolutely *nil*, and there were several items which
be brought into the assets in addition to those credited at
the accounts were sent to the auditors.
. RICH then read the subjoined report:—
A.—The Plantation shaft is sunk 30 fms. below adit; we intend to put out
cross-cut south and intersect West Basset lode, cut plat, and resume the
as soon as possible. The 30, west of Vivian's, is driven nearly to the Plan-
shaft. We hope to communicate the shaft with the level in three or four
from this time. The tin lode in the 40 west is worth 5*l.* per fathom. The
st is worth 8*l.* per fathom. We are driving a cross-cut south
k to the rise in the back of the 50, which has given good ventilation and
ost profitable ground. The 50 end east is worth 8*l.* per fathom. The lode
k of this level behind the end is worth 15*l.* per fathom. The 50 west is
l. per fathom; but, looking at the lode in the rise above the 60, ahead of
, we hope soon to have an improvement in the 50. The lode in the rise
k of the 60, already mentioned, is worth 18*l.* per fathom. The lode in
om of the 60 is worth 12*l.* per fathom. We are driving a cross-cut south
-west, to intersect the tin lode seen in the rise above the 70. In driving
west we have discovered a copper lode, diverging slightly from the tin lode
st; we have opened on it for some 8 to 10 fms., and have sampled (com-
) tons of copper ore for sale on the 6th inst. We have commenced to rise
k of the 70 towards the Plantation shaft; the 70 end west is worth 15*l.*
m for copper. We shall now begin to sink a winze in the bottom of the
ve the copper lode in depth. A rise in the back of the 70 west in the tin
put up 15 fathoms. We hope to communicate with the 60 in about a week.
is rise is holed to the 60 it will give good ventilation and open a valuable
of ground for stoping; the lode is standing whole to surface behind the
. The 80 east is worth 8*l.* per fm. The 93 west is worth 8*l.* per fathom.
keeping on a great deal of exploratory work throughout the mine. The
and other bargains are yielding fair quality tinstone; but the prevailing
w price for tin tells sadly against the profitable working of the mine. We
the copper lode will prove to be a valuable help in these depressed times. It
ever, satisfactory to note that notwithstanding the exceedingly low price of
we are able to keep on a good amount of tutwork, and to pay dividends
we fairly earned.—W. Rich, W. Williams, H. Abraham.
. WALTON proposed, Mr. LEECH seconded, and it was resolved
imously, that the report and accounts be received and adopted.
e CHAIRMAN had but little to add to what they had heard from
port and accounts. The financial statement showed that they
d but 1 ton of tin less than last time, but the amount realised
0*l.* less than in the preceding four months, so that their total
was 1991*l.* They were entirely without liability, and proposed
ure a dividend of 6s. per share, which would absorb 1836*l.* 18s.,
ve 154*l.* 5s. 8d. to add to the previous balance, which would
946*l.* 8s. 5d. for what they might call their working balance. To
is dividend they had not to discount a single tin bill. They had
oney in the bank to meet it, and costs paid up to last Saturday.
had heard what Capt. Rich had to say about the copper lode,
he was glad to say it had a north underlie, so that it would not
t of the property, and they could work it to any depth they
think fit. They had obtained 140*l.* or 150*l.* worth of copper ore
10 fms. driving, and had not touched the backs, and had earned
dit upon the 60*l.* outlay. He would propose that the dividend
per share. The secretary had just called his attention to the
that the 140*l.* for the copper was not credited in the accounts,
was 50*l.* for a small sale of old materials.
. LEECH seconded the declaration of the dividend, and the re-
ion was unanimously agreed to.
on the proposition of Mr. WALTON, seconded by Mr. LEECH,
committee were re-elected.
. WALTON considered the shareholders were much indebted to
. Rich for what he had done to bring the mine into its present
, and for his own part he now regretted that he had so long
ed the change.
pt. RICH explained that the copper lode was valued at 15*l.*
fathom, but he would warn them not to expect too much
the backs, as in going up the backs would come in contact
the tin lode, which would probably disorder it, but they
t expect a good lode in the bottom. He would remind them
had nearly half a parish to the west, which was not at present
ded at all, which would be of great value in the future. They
sold 200 tons of tin in the last sixteen weeks, although they
had a wet summer on the back of a wet winter. They had
ly heard that they had no liabilities whatever, that 180*l.* was
credited for ore and old materials sold, and the costs were all
to last Saturday. Tin had dropped nearly 20*l.* per ton since he
the honour of being in their service, and he did not know
their costs would increase if it went up 10*l.* per ton, as the
were well paid, and making 3*l.* 5s. to 3*l.* 10s. per month, and
had never much reason to complain. He hoped he might meet
many times under equally favourable circumstances.
. LEECH, in moving a vote of thanks to the Chairman and com-
e, remarked that when Mr. Marshall took the management
could not pay dividends with tin at 80*l.* per ton; they now did
this tin at 40*l.*, and he believed that with a better price for tin
would attain a very good position.——Mr. WALTON seconded
the resolution, which was unanimously agreed to, and, having been acknowledged by the Chairman, the proceedings terminated.

WEST PATELEY BRIDGE LEAD MINES.

An extraordinary general meeting of shareholders was held at the offices of the company, Gresham House, Old Broad-street, on Monday.—Mr. BAXTER in the chair. Mr. TRURAN (secretary) read the notice convening the meeting, and the minutes of the last meeting, which were confirmed. It was then resolved that the following resolutions, passed at the extraordinary general meeting held on Aug. 7, be, and the same is, hereby confirmed:—

That the several persons mentioned in the schedule hereunder written, having applied for and taken the number of shares set opposite their respective names, shall, at any time before June 30, 1878, have the right to call for and have allotted to them respectively a similar number of the unallotted shares of the company at par, on their paying, with such application, such sum per share as the directors may determine, and undertaking to pay the remaining amount on such shares as and when required by the directors.

That the right to call for and have such additional allotment as aforesaid shall be a personal right belonging to each such person, and shall not be transferable either with or as attached to the other shares so taken by them respectively as aforesaid or otherwise.

A vote of thanks to the Chairman and directors terminated the proceedings

EAST VAN MINING COMPANY.

The half-yearly meeting of shareholders was held in the board room of the Van Mines on Aug. 28, when Mr. WILLIAM PAGE occupied the chair. There were also a number of directors and shareholders present, including Messrs. Robert Oldrey and Fred. Hunt, Capts. W. H. Williams and Wm. Williams (engineer).

The CHAIRMAN, in opening the meeting, said they had not a secretary at present, and, therefore, it would fall upon him to read the notice convening the meeting. He also read the following report of the directors:—

The directors beg to lay before their co-proprietors a statement of the company's accounts to June 30, duly audited. The directors, in compliance with the special resolution passed at an extraordinary general meeting of shareholders, held on Aug. 1, 1876, offered to the registered shareholders of the 21st of the same month 1500 of the 3000 shares then created, in the proportion of one-tenth of a share for each of the 15,000 original shares of the company. This offer has been accepted to the extent of 1450 shares and three-tenths, which, at par price, realised 725*l.* 10s., leaving on hand of that issue 49 shares and seven-tenths. The expenditure since last account for labour, materials, and management, has amounted to 4174*l.* 7s. 8d., exclusive of 233*l.* for additional machinery, and 22*l.* 8s. 6d. for law and other charges, leaving a balance of unexpended capital of 440*l.* 12s. 1d.

The CHAIRMAN said that they had spent a great deal of money in mining, sometimes with great and at other times indifferent success, during the last 12 months. He might say that something like 4200*l.* had been expended, which included 2300*l.* for machinery. He then read the following reports of the captain:—

Llanidloes, Aug. 7.—Since your last annual meeting, Tempest shaft has been sunk 43 fms. 1 ft., and is now 7 ft. under the 40 below adit, or a total depth from surface of 81 fms. 1 ft. At the bottom of this shaft we have a strong branch of the lode, about 5 ft. wide, in which we have occasionally cut good stones of ore, but not sufficiently productive to value. We are now crossing north, towards the lode at the 40, below adit, and have crossed 2 fms., and have about 4 fms. more to cross to reach the lode. A winze has been sunk 15 fms. deep, below the cross-cut A by side of the lode, and a cross-cut put forth from bottom of the said winze 6 fms. 4 ft. long, under cross-cut A, in which we found only small specks of lead, not worth valuing. We have also driven west, by side of the lode, from the bottom of the winze 9 fms. 3 ft.; and at a point 8 fms. west of winze, we crossed south 9 fms., in order to intersect the branch, which in the 25 looked very kindly. We found here spots of ore, but not of value, as the branch seems to die away eastward of the shaft. We crossed north at the same point 1 fm. We have taken down the lode for a length of 5½ fms., east of cross-cut A, but in going westward, at about 9 ft. west of the cross-cut, we encountered a bed dipping westward, and forming a cap on the back of the lode, at the rate of about 6 ft. in the fathom, so that at the 40 it will have dipped 15 fms. westward, and our present cross-cut from the bottom of Tempest shaft will have a chance of intersecting it, if it continues to go down. In the stope in back of the cross-cut A the produce is very irregular, some days turning out very good stuff, and other days poor, so that it is a difficult matter to value it. We can do nothing better than follow it wherever it goes, and as long as it lasts. A rise has been put up in the back of the cross-cut A 15 fms. high, for the purpose of obtaining stuff to fill up the stope, and also by means of driving from the top of the rise to communicate with the 50 fms. cross-cut north from Tempest shaft, to provide ventilation for the stope. The said 50 fms. cross cut has been driven north 21 fms., the last 7 fms. of which was in the lode, which showed occasional spots of lead, but not sufficient to value. The 25 is extended 35 fms. west of Tempest shaft. At several points we met with a mixture of lead, but not rich enough to value. We have also driven a level upon the south part of the lode for a distance of 36 fms. west of Tempest shaft, and 10 fms. east of shaft. This driving passed through very kindly ground, showing at times good spots of lead, but not good enough to value. We have effected communication between the end of the 25 west and the level on the branch or south part of the lode by means of a cross-cut 17 fms. long, right through the lode. The main part of the lode in this cross-cut is about 5 fms. wide, looking very promising, and showing nice spots of lead occasionally. We shall now resume the driving of the level westward along its course. Now that we have our shaft down to the 40, and a more settled and compact lode in the end of the 25 west, we hope to meet with better success.—WILLIAM WILLIAMS.

Aug. 28.—I beg to supplement my report of Aug. 7 with the following additional remarks. At the 40 fm. level crossing we have crossed north from Tempest shaft 6 fms. We have crossed through the flookan, and intersected the bastard, which, being so varied in width, we may cut the main lode with a few feet more crossing. The 25 is now 40 fms. west of Tempest shaft, having been driven 4 fms. since my report above referred to. I am glad to say that the appearance and character of the lode continues to improve, with our progress westward, and now and then good spots of lead ore are met with, so that we are looking forward to make a discovery at this point.—WILLIAM WILLIAMS.

The CHAIRMAN proposed the adoption of the reports.——Mr. KNIGHT seconded the resolution, which was carried.——The CHAIRMAN proposed the re-election of Mr. Robert Oldrey on the board of directors, which was seconded by Mr. HUNT, and carried.——The accounts were read and adopted on the motion of Capt. H. WILLIAMS, and seconded by Mr. BOUGHTON-KNIGHT.——This brought the proceedings to a conclusion.

LAST CHANCE SILVER MINING COMPANY OF UTAH.

The report addressed to the shareholders by Mr. Charles C. Adley, C.E., dated New York, August 8, states that the conflict of opinion regarding the position of your company, with the absence of authentic and reliable information, induced your directors on May 25 last to request me to proceed forthwith to America, investigate your affairs, and report thereon. Accordingly I started the following day, arriving at Salt Lake City on June 16. Having arrived in Salt Lake City, and hearing that Mr. A. G. Hunter, the manager of the Flagstaff Company, was in charge of your property, on June 25 last I proceeded and took legal possession of your mines, though some resistance was offered, and in order to retain them, and prevent any interference by Mr. Hunter, it was necessary, according to American law, to at once start work. Having no funds for this purpose a temporary contract was entered into with a trustworthy miner—Mr. Hamilton—to take the workings above the upper tunnel level from June 26 last for three months on a tribute payable to the company of one-fifth of all the ore raised. This was the rate at which this part of the mine had been previously let to two tributers in succession, who both threw up their contracts as unprofitable. It was evident that no harm could be done to the mine by the letting of these upper workings, while it was hoped that ore of sufficient grade would be obtained to enable the company to pay current expenses, while the miners would at least cover wages. The men had not been at work long before they struck a body of argentiferous carbonate ore, disseminated with a rich, friable, auriferous quartz, assaying $345 in value, carrying 13 ozs. of gold and 59 ozs. silver to the ton. A sample of over 8 tons of this ore have been raised and sold, and fetched $285 per ton. According to the latest accounts the mine was continuing to yield equally rich ore, and was looking full as well, if not better. The working under this arrangement will expire on the 26th of next month, by which period the company will, doubtless, be in a position to resume operations themselves. The finding of this rich ore has created quite a sensation in the district, as it is expected it will lead to other very important discoveries, for it has long been believed that a rich auriferous quartz reef yet unfound traverses this mountain range, and is the source whence the gold deposits in the valleys below have originated.

Mr. Adley, after giving a very full description of the mining property of the company, suggests the following proposed plan of operations:—It is advisable that the company should in the first instance confine their attention to the working of the Last Chance vein only, setting the others aside for the present. This vein, as just previously stated, is in a condition to yield regular paying returns forthwith. Instead of, as is too often the case, making a rush at and starting on too large a scale of output at first, the extraction of ore should be limited to 30 tons daily, in order to allow of the development keeping ahead of the out-turn. This 30 tons daily of fair average ore, even of less value than the average hitherto obtained, would enable very substantial dividends to be earned. To make the mine uniformly and permanently productive preparations should be made to sink the shaft below the 600 ft. level to a depth of 1000 ft. at least, driving out levels at every 100 ft. in depth, as shown in section. The pumping power supplied should be on a liberal scale; for, although a discharge of 3000 gallons per hour has kept the mine dry hitherto, yet, considering the depth proposed, pumps should be provided capable of throwing 20,000 gallons an hour if necessary. It will be preferable, also, to work the pumps with compressed air, as the exhaust will assist in ventilating the workings to the deep. A powerful and efficient hoisting apparatus should also be supplied. To carry out these improvements effectually engine power to the extent of 80-horse power should be provided. By this means a sure and sound base of operations would be laid down for a large, highly profitable, and permanent mine. The works above-described need not be carried out to the fullest extent at first, but with due foresight and regard to ultimate requirements they should be planned so as to be executed upon the above scale. At the present moment, upon a fair estimate, the ore proved should, according to previous results, amount to 50,000*l.* in value at least, the profits on which will considerably more than cover the cost of the new machinery, and suffice to keep the works well in hand, maintaining regular supplies of ore, without exhausting the reserves while the opening up of the mine is progressing. As early as circumstances will admit, a trial shaft might be sunk about 100 to 200 ft. from the southern boundary of the company's property, and if the results prove satisfactory, continued, and connected with No. 2 level.

ESTIMATE OF WORKING EXPENSES AND PROFITS.—The working expenses, based on the principle of limiting the output to 30 tons daily, and keeping in the wake of development, will be thus:—Fuel, engineers' labour and grease, working engines, per diem $50; thirty miners ore getting, at $3, $90; thirty miners developing, at $3, $90; five men extra outside, at $3, $15; timbering, powder, fuse, contingencies, and superintendence, $105; total daily expenses, $350, or (say) in round numbers, monthly, $10,000. Taking the returns of ore roundly at 800 tons a month, and assuming this to fetch only $25 per ton—a low price—we should have 800 tons of $25, $20,000; deduct working charges as above, $10,000: net monthly profit, $10,000. The net annual profit would, therefore, amount to $120,000, or 24,000*l.*

CONCLUSION.—It is clear your property is in a more satisfactory, hopeful, and solid position than it has been for some time past. A large sum of money has been expended in developing the mines over a period of three years. The works have been efficiently executed and opened out to such an extent that immediate paying returns can be made and regularly maintained. The property is a very valuable one, and possesses the makings of a great mine, if not the richest and most profitable mine in the district. The patent and title are indisputable, and possess the advantages of being the oldest location. The just and pressing liabilities are small, amounting only to 2000*l.*, and this sum would be rapidly recouped out of the profits. There is no floating debt of any kind, and the claim of Mr. Davis, owing to his liberal concessions, has been satisfactorily adjusted with due regard to the interests of the shareholders. Under judicious management, therefore, the company should henceforth start on a sound and paying basis, with the prospect of early dividends.—CHARLES C. ADLEY, C.E., Chairman.

ALMADA AND TIRITO CONSOLIDATED SILVER MINING COMPANY (LIMITED).

Wm. Clemo, June 14: I have this week unfortunately to wait upon you with bad news. Early on Sunday morning we discovered smoke coming out of the mine. We immediately went into the tunnel, but could not get to the fire on account of the smoke. We then went down the Balvanera shaft, and through the tunnel, and met the fire in the Virgin stull, but could not put it out, so we cut the stull in two a little behind the fire, to prevent its burning further north. We then tried to beat back the smoke in the tunnel by throwing a jet of water with the steam-pump. With this we finally got in as far as the engine-room, and discovered the engine-room to be on fire also, but the smoke was so strong we could not work in it. We then stopped all the entrances to the mine, and turned the steam hose on the engine-room. On Tuesday morning we opened the mouth of the tunnel and got into the engine-room, and found that the damage was not so great as we expected. The shaft is not burnt nor the landing brace, and I think the bearers under the engine are safe. The bearers under the winding-gear are burnt a little, but I think not badly. The winding-rope is entirely destroyed. The smoke and heat then became so strong that we could not stand it, so we stopped the mouth of the tunnel and again turned on the steam. I have no more to say at present. This afternoon we are going to try to go in. The fire has occurred in two places. Between these two places are about 7 fms. of cross-cut without any timber. South of this cross cut is the landing-brace poppet-heads, and, in fact, a lot of timber not touched by fire. I, therefore, think this fire was not the result of accident, but was the work of some malicious person.

June 21: I mentioned last week that we were going to open the mouth of the tunnel, and try to get into the mine. We did so, and after a hard fight with the smoke and heat we put out the fire that was left in the engine-room, and found that the whole of the timbers under the engine and the winding gear were entirely destroyed, so that we have had to take all the machinery out. We have now got all the engine bearers in place again, and commenced to get in the engine, which I hope will be completed in four or five days. We are not yet able to tell the exact amount of damage done to the tunnel level. We have seen that the tunnel has fallen in in two places 100 feet apart; whether it is all fallen in between these two points or not we cannot yet tell. We tried to get back through the 10 fm. level to get to the tunnel level through one of the north passes, but found that one of the old stulls had fallen from some unknown cause, but I do not think by fire. (This stull has been out of use for some time). We then tried to go through the 20 fm. level to get to the tunnel through the north winzes, but the air was so bad that our candles would not burn, but we hope in a few days we shall be able to get through, as the air appears to improve every day. We have two good winzes from the north end of the 20 fm. level, and two from the north end of the 10 fm. level, so we shall be able to work the north end of the mine from these winzes until we get the tunnel level cleared. Since I wrote to you last we have discovered more proof of the mine having been fired intentionally. We found that the shaft was set on fire also. We found bits of rope on one of the dividings, which burnt in two one of the shuttles, but from some cause went out without doing further damage.

June 28: Since I wrote you last we have made some further explorations in the mine. We have got from the 20 fm. level north to the 10 fm. level, and found that the stull in this level was also destroyed by fire, as we have now seen the two ends of it. The stull fallen in in this place I judge to be about 80 ft. long; this stull is not of any great importance, as we have a good level in the 20. We then got up into the tunnel level, and found that the fire had reached to the place where we had cut the Virgin stull in two. All the rest we find uninjured, except in places where a few rocks have fallen off the sides and back of the levels. The timbermen have commenced to open up the tunnel level. The engine began to work on Wednesday morning, and is working well pumping out the water, which had risen within 6 ft. of the 32. We have also begun to work in the stope in front of engine-shaft, over tunnel level, but we cannot yet work to good advantage, as the mine is still very hot, and full of foul air.

July 5: I mentioned last week that the engine was working, pumping out the water. We got the water down nearly to the back of the 42, and had commenced to work opening the tunnel level and breaking ore in some of the stopes, but it became so hot from the steam and foul air that we could not work, so we were obliged to stop the engine; we are now waiting for the mine to clear itself of the bad air, of which it is full; this, unfortunately, has occurred in the worst time of the year, as the mine has always been hot and the circulation of air bad for a few days before the rains commence; we are daily expecting the rains to begin, then I hope the mine will be thoroughly cleared.

Frank W. Breach, July 12: I yesterday forwarded to Messrs. Cross and Co. for transmission as follows:—"No profit for June, progress underground satisfactory." During the month we only worked two weeks out of the five, and as all the expenses caused by the fire, including the timber for the bed and re-erection of the machinery, and timber and labour in opening the tunnel through the Virgin, are charged against the mine as ordinary working expenses, I think it may not be considered unsatisfactory that the account shows a trifling loss on the months' working of $140.

Since July 5 all the work we can employ the hands at is going forward underground. Our timbermen are busy re opening the tunnel through the Virgin (new east lode), and to push the work ahead as much as possible we have put them on in eight-hours shifts, so that the work is continuous. It is very hot still where they are opening the tunnel; so great was the heat of the fire in this place that the adle is run together in clinkers, and stones of quartz are glazed on the outside. I expect in about a week they will have the tunnel open to a ladder-road communicating with the 10 fm. level, after which they will have better ventilation, and I hope we shall then be able to start the machinery and pump out the Tirito shaft. We are raising ore from the 10 and the pillar over the tunnel sufficient to keep the mill at work half time.

Within a few hours of posting my letter last week the rainy season commenced with a violent wind storm, which had the effect of clearing the foul air out of the mine as far as the 20. During the week it has gradually improved, until we can now reach the 32. I do not enclose a letter from Capt. Clemo as usual, as he is in Alamos acting as interpreter of some of the evidence being taken in the case of the late fire. We have now, with the evidence being tendered to-day, produced sufficient to convict the man in jail of the incendiary fire before any impartial court. The directors on Aug. 27 received the following telegram from Mr. Breach:—"Profit for July, $700; tunnel will be open in four weeks." [Memorandum.—This probably left the mines about the 12th of August.—J. A. MORGAN: London Manager.]

ROYAL EXHIBITIONS.—The following is a list of candidates who have been successful in obtaining royal exhibitions of 50*l.* per annum each for three years, and free admission to the course of instruction at the following institutions:—1. The Royal School of Mines, Jermyn-street, London: Henry M. Platnauer, 19, student, Brixton; Alfred Cliff, 22, engineer, Liverpool; John J. Beringer, 20, druggist, Redruth.—2. The Royal College of Science, Dublin: William Cross, 21, engineer, Bristol; Charles M. Luxmoore, 19, chemist's assistant, Bristol; Walter E. Adeney, 19, chemist's assistant, London.

NEW TRAM-CAR.—Mr. John Eades, of Pendleton, has patented a new tram-car, which possesses many advantages. It is lighter by 16 cwts., and though 8 ft. shorter it carries only six passengers less than an ordinary car. There is a saving of fully 30 per cent. in horse-power. By a simple yet safe arrangement a change of front is effected at the end of the journey. The body of the car revolves on a pivot, and the turning is done by the horses, which remain hooked, the process occupying only four seconds. The roof is reached by two stairs at the rear of the car, the dangerous side step being thus dispensed with. Each axle has a compensating wheel, enabling the car to traverse the sharp curves at street corners without grinding. The vehicle is also provided with springs, which give an agreeable elasticity to the motion, and reduce the jolting when any hard substance lies on the rail. The interior of the car is airy and comfortable.

HALF-YEARLY FOREIGN AND COLONIAL MINING SHARE LIST JANUARY TO JUNE, 1877.

SHOWING THE PRICES OF THE LONDON MARKET ON THE 1ST JANUARY, AND THE 30TH JUNE, 1877, AND THE LOWEST AND HIGHEST PRICE FOR THE SIX MONTHS JANUARY TO JUNE INCLUSIVE.

CONTRIBUTED BY **Mr. EDWARD ASHMEAD**, LONDON MINING AGENT AND ACCOUNTANT, 62, CORNHILL, LONDON, E.C.

THE FOLOWING LIST EMBRACES THOSE MINES IN WHICH DURING THE PAST SIX MONTHS THERE HAVE BEEN FREQUENT DEALINGS AND CONSTANT QUOTATIONS, AND NOT THOSE IN WHICH THERE HAVE BEEN BUT FEW TRANSACTIONS AT LONG INTERVALS. SHARES HAVING THEIR TRANSACTIONS EXCLUSIVELY IN PROVINCIAL MARKETS WILL NOT BE FOUND IN THIS LIST.

Mine and Country.	Mineral.	Shares.	Paid.	Price, Jan. 1, 1877.	January.		February.		March.		April.		May.		June.		Price June
					Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	
FRANCE.			£ s. d.		£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	
Pontgibaud*	Silver-lead ...	10,000	20 0 0	16 to 18	16	22	20	23	21	25	23	27	25	27	24	27	25
ITALY.																	
Pestarena	Gold	80,000	3 0 0	⅛ ⅜	⅛	⅜	⅛	⅜	⅛	⅜	⅛	⅜	⅛	⅜	⅛	⅜	⅜
RUSSIA.																	
Russia Copper	Copper	30,000	10 0 0	2 2¼	1¾	2¼	1¾	2⅞	2¼	2¾	1¾	2⅞	1½	2¼	1½	2¼	1⅝
SPAIN.																	
Alamillos*	Lead	35,000	2 0 0	2 2½	2	2½	2	2½	1⅞	2½	1½	1⅞	1½	2	1½	2	1⅝
Fortuna*	Lead	25,000	2 0 0	6½ 6⅝	6¼	6⅝	6½	7	6	7	6	6½	5⅝	6⅛	5	6⅛	5
Linares*	Lead	15,000	3 0 0	6 6½	6	7	6¼	7¼	6	7¼	5½	6⅞	5⅝	6⅜	5⅝	6½	6
Rio Tinto	Copper	225,000	10 0 0	4½ 4⅝	4	5⅛	4⅜	5¼	4	5¼	3½	4⅝	3	4	3¼	4	3⅝
ditto 7 p. c. Mort. Bonds.	Copper	49,350	20 0 0	13¾ 14¼	13	14⅛	13¾	15½	14⅜	15½	12⅜	15⅛	12	13⅜	13	14½	13⅛
ditto 5 per cent. Spanish Coupon Bonds	Copper	£2,123,000	100 0 0	61 63	58	64	62	67	63	67	53	66	52	59	55	60	56
Tharsis*	Sulphur, &c....	68,230	10 0 0	21 23	21	23	18	23	19	24	22	24	22	23½	22½	24	23
NEVADA.																	
Eberhardt and Aurora* ...	Silver	27,528	10 0 0	8 8¼	7⅞	9⅛	8	12¼	8⅛	9¼	7⅞	9	7	8⅛	6⅞	8	6⅝
Richmond*	Silver, lead, gold	54,000	5 0 0	8¾ 9¼	5⅛	9⅛	6	8	5⅜	6¾	5⅛	7	5⅜	7⅛	5⅞	7⅛	6⅝
South Aurora	Silver	60,000	5 0 0	6s 3d 8s 9d	¼	⅜	¼	8s. 9d.	¼	⅜	3s. 9d.	⅜	⅜	⅝	1s. 3d.	⅞	⅝
COLORADO.																	
Colorado United...	Silver-lead ...	21,000	5 0 0	¾ 1¼	¾	1¼	¾	2¼	1	2¼	1¼	2	1¼	2	1½	2	1⅝
CALIFORNIA.																	
Birdseye Creek	Gold	15,000	4 0 0														
Blue Tent	Gold	30,000	5 0 0	3 3¼	3	3¼	3	3¼	3	3¼	3	3¼	3	3¼	2⅞	3⅛	3
Cedar Creek	Gold	40,000	5 0 0														
Exchequer	Gold	100,000	1 0 0	1 2⅛	1	2⅛	1	2	1	2⅛	1	2⅛	1	2	1	2	1⅛
I.X.L.	Gold	100,000	1 0 0	1 1⅛	1	1⅛	1	1	1	1⅛	1	1⅛	1	1⅛	1	1⅛	1
London and California ...	Gold	165,000	2 0 0														
Sierra Buttes*	Gold	122,500	2 0 0	1½ 1⅝	1½	2	1½	1⅝	1½	2	1½	2⅛	1½	2	1½	2	1⅝
ditto, Plumas Eureka*...	Gold	140,000	2 0 0	2½ 2⅝	2½	3	2½	3	2½	3⅛	2½	3⅛	2½	3	2½	3	2⅝
OREGON.																	
Oregon, Preference	Gold	3,000	4 0 0	4 4⅛	4	4¼	4	4⅛	4	4¼	4	4⅛	4	4¼	4	4¼	4
UTAH.																	
Chicago*	Silver	13,225	10 0 0	5⅝ 6⅛	4	6½	4	5	4	5	3⅜	4⅝	3	4½	2	3½	2
Emma	Gold and silver	50,000	20 0 0										1-16th	3-16ths	—	—	—
Flagstaff	Silver	30,000	10 0 0	1⅜ 2½	1¼	4	3	4	2⅛	3½	2	3½	2½	3	1⅝	2⅜	2½
Last Chance...	Silver	20,000	5 0 0			1½		1½		1							
Tecoma...	Silver	30,000	10 0 0	½ ¾	½	¾	½	¾	½	¾	½	¾	½	¾	½	¾	¾
MEXICO.																	
Almada and Tirito	Silver	130,000	1 0 0	⅛ ⅜	⅛	⅜	⅛	⅜	⅛	⅜	⅛	⅜	⅛	⅜	⅛	⅜	⅜
United Mexican	Silver	43,372	28 15 0	2 2½	2	2⅝	2	2⅝	2	2½	2	2½	1½	2⅛	1⅝	2⅛	1⅝
NICARAGUA.																	
Chontales	Gold	62,827	2 0 0	¼ ½	¼	½	¼	⅜	¼	⅜	⅛	¼	¼	½	⅛	¼	⅜
Javali	Gold	46,095	2 0 0	10s. 12s.	9s.	½	¼	⅜	¼	⅜	7s.	½	⅜	½	6s.	½	8s.
VENEZUELA.																	
New Quebrada	Copper	66,000	5 0 0	3½ 4	3½	4¼	3½	4½	4	4⅜	3½	4⅜	1½	4½	1½	2⅜	1⅝
U. S. OF COLUMBIA.																	
Frontino and Bolivia* ...	Gold	54,678	2 0 0	1½ 2	1½	2	1⅜	1⅝	1⅜	1⅝	1½	2½	1½	2⅜	2⅛	3⅛	2⅝
Malabar	Gold	75,000	1 0 0														
Malpaso	Gold	40,000	1 0 0	⅜ ¾	⅜	⅝	⅜	⅝	⅜	⅝	⅜	¾	⅜	⅝	⅜	⅝	⅝
BRAZIL.																	
Don Pedro North del Rey...	Gold	100,000	0 16 0	11s. 13s. 6d	11s.	16s.	6s.	16s.	6s.	11s.	6s.	11s.	6s.	11s.	6s.	13s. 6d.	8s 6d
Santa Barbara*	Gold	40,000	0 10 0	2⅜ 2⅝	2⅜	2⅝	2⅜	2⅝	2¼	2½	1⅞	2¼	1⅞	2	1½	2½	1⅝
St. John del Rey*	Gold	£253,000	Stock.	315 325	315	335	230	330	230	320	250	300	270	330	260	330	260
CHILI.																	
Condes of Chili	Silver	16,000	5 0 0	5 5½	4⅞	5½	4⅞	5⅛	4⅞	5½	4½	5½	4	4½	3	4½	3
Panuncillo	Copper	50,000	4 0 0	1½ 2	1¼	2	1¼	2	1⅛	1⅝	1	1⅝	1	1⅜	¾	1⅛	1
San Pedro	Copper	25,000	2 0 0	1⅝ 1⅞	1	1⅝	⅞	1	⅞	1	½	¾	¾	¾	9s.	¾	⅝
ARGENTINE REPUBLIC.																	
Argentine	Gold	12,000	5 0 0	5⅝ 6¼	5¼	6¼	4⅞	6	4½	5½	3⅞	5	3⅞	4⅝	4⅛	4⅞	4⅜
AUSTRALIA.																	
Australian Mining*	Copper	18 315	7 0 0	1⅜ 2⅛	1⅜	2⅛	1⅜	2⅛	1⅜	2⅛	1⅜	2⅜	1⅜	2⅛	1⅜	2⅛	1⅜
Port Phillip*	Gold	97,500	1 0 0														
Scottish Australian*	Coal, &c.... ...	120,000	1 0 0	1⅞ 2⅛	1⅜	2⅛	1⅜	2⅛	1⅜	2⅜	1⅜	2⅜	1⅝	2	1⅜	2⅛	1⅝
ditto, New*	Coal, &c.... ...	80,000	0 5 0							1		1					
Yorke Peninsula...	Copper	75,000	1 0 0														
ditto, Preference	Copper	40,000	1 0 0	1⅛ 1⅜	1⅛	1⅜	1⅛	1⅛	1⅛	1⅛	¾	1	¾	1	1⅛	1⅛	1
NEW ZEALAND.																	
New Zealand Kapanga ...	Gold	20,000	5 0 0	3¾ 4¼	2½	4½	2½	2¾	2	3¼	1¾	2¾	1	2½	1½	3	2½
SOUTH AFRICA.																	
Cape Copper*	Copper	20,000	7 0 0	38 40	38	41	39	42	39	42	39	42	34	40	34	40	36

Those marked * have paid Dividends in the last twelve months. There are several Foreign Mining Companies registered in this country which have also paid Dividends within the last year whose shares are seldom quoted.

NOVEL DREDGING MACHINE FOR AURIFEROUS MINING.—The California Mining and Dredging Company have in operation near Oroville a novel description of dredger, which is employed to raise from the river bottom the auriferous gravel. The machinery is placed on the deck of a flatboat or scow, 80 to 100 ft. in length and about 30 ft. in width. The principal feature of the affair is a large iron cylinder, 40 ft. long and 30 in. in diameter, suspended from a derrick securely set in the scow. The cylinder is closed at the upper end by an iron head securely riveted on. Through this iron head two pipes are inserted, one leading from the steam-boiler, and one from the water pump. The operation of the machine is as follows:—The cylinder is lowered by a wire cable into the river, and allowed to sink until it touches bottom. As its weight is about 3 tons it always sinks quite a distance. As soon as the cylinder stops sinking steam is let on from the boiler into it, so as to expel the air, the pressure being 15 lbs. to the square inch. When the air is expelled and the cylinder full of steam, cold water is immediately let into the top of the cylinder. The water at once condenses the steam, and leaves a vacuum in the tube. As soon as the vacuum is formed atmospheric pressure asserts its power, and forces into the cylinder a mass of mud and gravel, weighing from 4 to 7 tons, and sometimes filling up the pipe for 10 or 15 ft. The pipe is then hoisted by steam-power, and its contents dumped into a string of sluice boxes alongside the scow. Water is furnished to these sluices by a Chinese pump worked by the engine that works the water pump.
— *Foothill Tidings.*

METALLURGICAL REVIEW.—The first number of a new technical magazine has just been issued by Mr David Williams, of New York, under this title, the object being to bring together in a convenient form the leading facts published either in the Old World or the New, connected with the production of the useful metals. The first number contains more than a dozen original papers upon subjects of great interest to metallurgists. The place of honour is accorded to the first part of a treatise by Prof. R. H. Thurston, of the Stevens Institute of Technology, on the "Mechanical Treatment of Metals." Prof. Thurston's international reputation in the field of mechanics, and the thoroughness and value of his work in the mechanical laboratory, give especial interest to his paper on the various processes for increasing the apparent and normal elastic limit of metals by mechanical treatment. This if followed by the first of a series of papers on "The New Iron District of Ohio," by Mr. Edmund C. Pechin. This region, known as the Straitsville district, in Perry and Hocking counties, Ohio, is now attracting great attention, and its claims to recognition as the future areat centre of iron production are carefully and impartially considered by Mr. Pechin, who is specially well qualified for the task. A very clear map assists the trade in studying the topography of the country. "The Siphon Tap in Lead Smelting," by C. Kirchoff, [illegible] practical discussion of a new improvement in lead reduction. The paper [illegible] practical interests is probably that on "The Danks Furnace at the Millvale [illegible] Pittsburg," by Mr. John I. Williams, superintendent. This describes the [illegible] with the Danks furnace, the difficulties, discouragements, improvements [illegible] final practical success, with figures of cost and product, and illustrations [illegible] the improvements. A paper "On Steel," by Mr. William Metcalf, C.E., [illegible] minent steel manufacturer, of Pittsburgh, gives some interesting data re[illegible] the effect of variations of the carbon line on the quality and strength [illegible] "Studies of Elemental Iron, and its Modifications," by Prof. Henry Wur[illegible] introductory chapter not uninteresting, but something more than special [illegible] its character. These studies are regarded by the professor as the first prac[illegible] plication of his discoveries in molecular physics. The author appears to [illegible] free and easy style of choosing factors at discretion, and is thus enabled to [illegible] products which nearly correspond with what he wishes them to be. Deve[illegible] may prove the contrary, but at present the discoveries and the applic[illegible] them appear to equally want modification to give them even the appea[illegible] utility. Mr. Joseph D. Weeks, of Pittsburg, contributes an article of [illegible] methods of "Protecting the Lining of Blast-Furnaces," and Mr. A. J. [illegible] chemist, an article on the "Determination of Phosphorus in Iron, Steel, an[illegible] Besides these there are a number of short articles of metallurgical interest [illegible] condensed translations from recent dates of foreign scientific periodicals.

A petition to wind-up the West Swansea Colliery Compa[illegible] been presented to the High Court of Justice.

The Master of the Rolls has appointed Mr. Alfred Good [illegible] Daniels, and Co., Poultry) and Mr. C. F. Finney (Finney and Son, [illegible] official liquidators of the Oakham Colliery Company (Limited).

IMPROVED ELEVATOR.

...ough a considerable degree of perfection has been attained ...winding of coal and the lowering and raising of men, it cannot ...bted that there is still some room for improvement, and an ...in this direction has been made by Mr. PENARUN, of Paris, ...has invented an engine which can he claims be used as an ele... ...or as a traction engine. The invention is chiefly based on the ...of a moveable screw on the engine or machine, turning in a ...tubular nut extending the whole course to be traversed, the ...motion with which the screw is actuated causing the screw ...engine to advance. If the way to be traversed is vertical ...ained, the screw in turning in one direction causes the engine ...; if the screw ceases to be actuated the engine can descend ...ally of its own weight; the friction of the screw in the nut ...serves to moderate the movement which prevents any accident ...the descent. Both the essential parts, the screw and the ...present arrangements which can be varied according to the ...ases to which the invention is applied. Amongst the most im... ...t of these are the application of the engine to raising loads, ...for example, as from mines, and its application as a locomotive ...tion engine on metal ways with steep gradients, as, for ex... ...on a mountain. In applying the invention for raising (say) ...minerals from the bottom of a mine, he places in the mine ...vertical tube which forms a nut. This tube is made up of ...parts or portions connected together by stays and bolts, or ...suitable manner, and each of the parts or portions has heli... ...projections which form the threads of the nut. In this nut ...the screw, the rotary motion of which produces the ad... ...or receding, and consequently the lifting or descent of the ...which it is fitted. The cage carries a second screw turning ...ubular nut parallel to the tubular nut already described, and ...as a guide. The tubular nuts are formed for their whole ...with a slot or opening, to give passage to the arms which ...the screws to the cage; these slots may have bands or strips ...to keep them closed; the screws may be formed as ordi... ...rews, but with very quick threads, in order that the cage can ...by its own weight. He prefers however, to arrange on the ...ical part of the screw rollers mounted on inclined axes, these ...being arranged in a continuous helix, having the same pitch ...thread of the nut. There are two sets of rollers, the one ...on the upper and the other on the lower surface of the thread; ...llers may likewise be placed horizontally. The body of the ...is prolonged at top and bottom by journals which serve as its ...these journals turn in sockets. The socket of the lower ...is fixed to a foot projecting from the platform of the cage, ...of the upper journal is fitted to the upper part of the cage, ...the cage is firmly connected with the screw while the latter ...to turn. It is the same with both the screws. ...platform of the cage has a hook on its under side to which ...or baskets for containing the coal are suspended: the miners ...on the platform, which is surrounded by a fence or rails. Of ...screws only one is employed as the driver; it is actuated ...steam, gas, compressed air, or other motor situated on the plat... ...of the cage. The main shaft of this motor carries a pinion ...with a pinion on the upper journal of the screw on which ...be made to slide by a lever clutch. By means of this clutch ...pinions can be separated and the motion of the screw thereby ...ed and the cage suspended. A break strap on the lower part ...screw allows of the motion being regulated. On each of the ...may be a driver, and each carry a break strap; the motor ...cage platform may be accompanied by its boiler and furnace, ...avoid the dead weight and the objections to having a fire at ...ttom of the mine shaft, it is better to have the boiler at the ...e, and to convey the steam through a flexible pipe, which un... ...as the cage descends; or at the side of the motor a generator ...furnace may be placed containing superheated steam at ...ssure. ...en the apparatus is applied as a traction engine the engine ...is provided with wheels which run on the rails; to the frame ...so fitted parts carrying the driving screw which turns in a ...ut arranged in the middle of the way. The screw is driven ...ertical which transmits the movement from the driving shaft ...axis of the screw. The mechanism comprises, as in the pre... ...case, a clutch or disengaging device and a break. For this ...ation of the invention it will be necessary to have a screw ...double rollers placed in opposite directions on account of the ...ation of ascents and descents. For the same reason the engine ...be turned, or at least the inclination of the platform should ...anged at all points where the line changes.

...RREXIN.—It appears that in Germany this explosive is be... ...ng quite popular among coal miners. The inventor is Mr. G. ...rs, and large quantities of it are now being manufactured both ...iana, in Trieste, and at Brunn, near Wiener-Newstadt. In ...y explosive there was found by the analysis of Mr. J. Fels, of ...-Picric acid, 1·65; charcoal, 7·49; beech sawdust, 10·97; ...ic nitrate, 42·78; sodic nitrate, 23·16; sulphur, 13·40; loss, ...·00. Diorrexin is about 25 per cent. lighter than Austrian ...g powder, and of about equal strength, whilst it does not ...ve than one-fifth.

...'s SAFETY-LAMPS.—The improvements proposed by Mr. ...AM WEBSTER, jun., of Lee, Kent, consists in providing the ...with two concentric cylinders of the usual wire gauze for the ...and in providing the upper and lower portions of the lamp at ...ts required for inlet or outlet with two parallel plates of ...the wire gauze in all cases being separated by a small inter... ...air space. In a draft chimney of talc, which he adapts to ...werful petroleum or oil burner. It is well known that the ...y Davy lamp is very defective in the amount of light that ..., and the usual contrivances to obviate this defect have been ...ng glass cylinders and bulls' eyes as part of the envelope, but ...e contrivances have proved defective and dangerous from the ...fracture involved. In his improvements he seeks to increase ..., which he does by using any powerful burner with the talc ...himney above described. In this way he gets a very powerful ...sufficient even to pass through the two cylinders of ganze ...and yet increase the light over the ordinary Davy in a remark... ...gree. By the double cylinder of gauze he also increases the ...of the lamp where currents of inflammable air and gas might ...the flame of the burning gases through the ordinary one ...er of gauze. In his lamp the explosive mixture can never ...heat the outer cylinder, and much greater security is acquired ...a much higher illuminating power.

...PROVED STEAM BOILER AND SUPERHEATER.—Messrs. Carval... ...and Pattee, of New York, have patented an invention the object ...which is to economise fuel in the generation of steam, and to ...heat the steam from the boiler in a separate and independent ...dome, so as to prevent priming, and permit pure dry steam ...to go to the cylinder of the engine. It is intended to provide ...lower part of the boiler an enlarged heating surface that ...in accelerating the generation of steam and the more perfect ...tion of the fuel. A hollow water back or loose reservoir is ...in the combustion chamber of a boiler, and a water-conduct... ...pe that leaves the highest point of the water back at the side ...boiler enters from the outside of the boiler into a separate ...dome that is connected by a pipe and check valve with the ...steam dome. A heating water-pipe is arranged in the shape ...pentine coil in a separate steam dome, and conducted then ...the shell of the boiler. The steam in the steam dome is ...heated and made drier, being brought by the pipe to greater ...ion and elasticity than the steam in boiler, so as to be used ...greater effect in the cylinders of the engine to which the steam ...is connected by suitable pipes. From the superheater the ...pipe longitudinally through the boiler to the back of the same, ...down along the boiler, and enters at the bottom or lowermost ..., which is usually the coldest on account of the insufficient ...ge of the fire gases through the lower flues.

PARIS INTERNATIONAL EXHIBITION, 1867.

VIENNA INTERNATIONAL EXHIBITION, 1873.

LONDON INTERNATIONAL EXHIBITION, 1874.

CORNWALL POLYTECH SOCIETY, 1867 and 187

TANGYE BROTHERS AND HOLMAN,

10, LAURENCE POUNTNEY LANE, LONDON, E.C.,

AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

The "SPECIAL" DIRECT-ACTING STEAM PUM

WITH

Holman's Patent Self-acting Exhaust Steam Condensers.

UPWARDS OF 12,000 "SPECIAL" STEAM PUMPS ARE IN USE

After eight years of successful application for all purposes to which steam-driven pumps can be applied, THE "SPECIAL" STEAM PUMP STILL MAINTAINS THE FIRST POSITION IN THE MARKET, notwithstanding that it alone—of all direct-acting pumps—has been subjected to the great variety of severe tests that must be encountered in such a period of time. Some valuable improvements have been suggested in the course of a long experience, and their adoption has rendered the apparatus at once the simplest and most certain in action. There is absolutely no extraneous gear, and the steam cylinder is *no longer than the pump*. The valves are of easy access, and are suited for pumping fluids and semi-fluids of almost any consistency.

Holman's Condenser

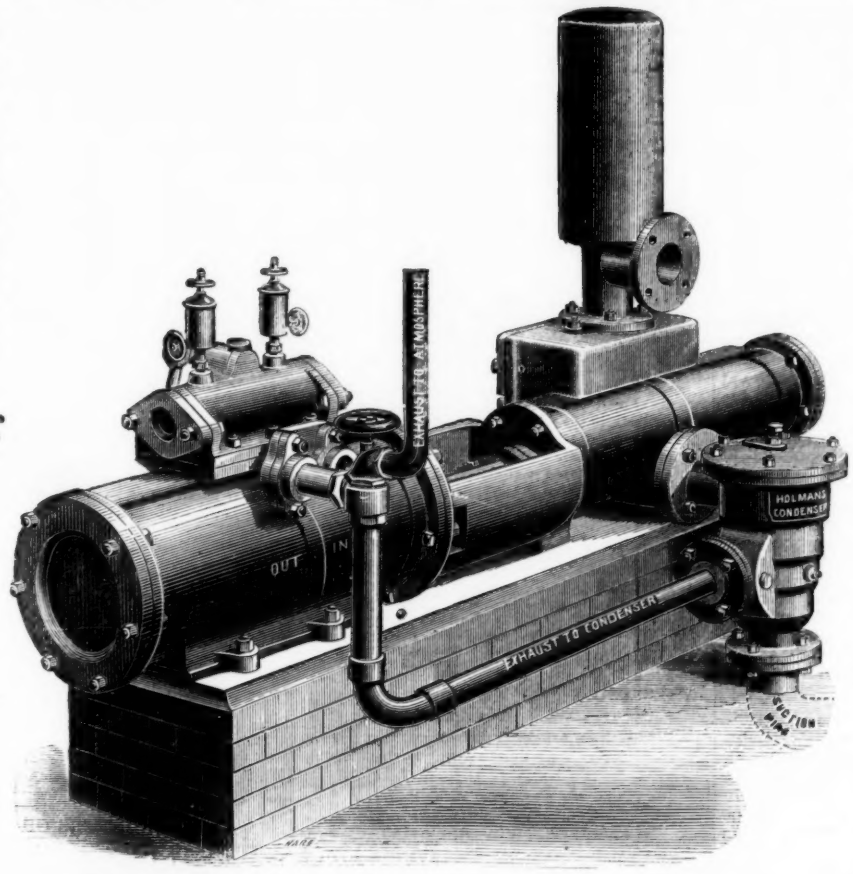
TURNS WASTE STEAM INTO GREAT POWER.

SAVES HALF ITS COST IN PIPES AND CONNECTIONS.

PREVENTS ALL ESCAPE OF STEAM IN MINES OR ELSEWHERE.

REQUIRES NO EXTRA SPACE.

SAVES TWENTY TO FIFTY PER CENT. OF FUEL.



WILLIAM ELLIOT, Esq., *of the Wearda and Coal Company, writes under date Sep* 1875, *as follows:*—"We have now THIRT of your SPECIAL STEAM PUMPS in op at the various collieries under my charge of them employed pumping water out of o to the depth of 50 fms.—others employed pits, and a good many feeding Boilers. no hesitation in saying that we have found the Cheapest and Best Pumps of the k have tried. I can with confidence reco them to intending purchasers."

Messrs. BURT, BOULTON, and HA *Chemical Manufacturers, of London,* FORTY of the "SPECIAL" STEAM PU use at their works.

HOLMAN'S CONDENSE

Are made to suit any size and kind of Pump. They form a part of the suctio of the Pump, and while they effectual dense the exhaust steam they produce rage vacuum of 10 lbs. per square inch steam piston, increasing the duty of the and effecting a saving in fuel of from per cent.

In Mining operations these Condense be of great value.

All Boiler Feeders are recommended fitted with these Condensers, as not only exhaust steam utilised in heating the water, but is returned with it into the bo

GREAT REDUCTION IN PRICES.

The following sizes are suitable for low and medium lifts:—

Diameter of Steam Cylinder ...In.	3	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8	8	8	8	8	9	9	9	9	9	10
Diameter of Water Cylinder ...In.	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4	5	6	7	8	5	6	7	8	9	10
Length of Stroke .....In.	9	9	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	12	18	24	12
Gallons per hour	680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070	7330	9750	13,000	5070	7330	9750	13,000	16,500	5070
Price of Special Pump ...£	**16**	**18**	**20**	**25**	**22 10**	**27 10**	**32 10**	**25**	**30**	**35**	**40**	**30**	**35**	**40**	**45**	**50**	**40**	**45**	**50**	**55**	**65**	**50**	**55**	**60**	**70**	**85**	**55**
Extra, if fitted with Holman's Condenser and Blow-through Valve	£7	£7	£9	£11	£8 10	£11 10s	£12 10s	£9	£12	£15	£15	£10	£13	£15	£16	£22	£13	£16	£16	£22	£22	£16	£16	£23	£24	£35	£1

CONTINUED.

Diameter of Steam Cylinder..In.	10	10	10	10	12	12	12	12	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	18
Diameter of Water Cylinder..In	7	8	9	10	6	7	8	9	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10	12
Length of Stroke .....In	12	18	24	24	18	18	18	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Gallons per hour	9750	13,000	16,519	20,000	7330	9750	13,000	16,519	20 000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	16,519	20,000	30,000
Price of Special Pump..£	**65**	**75**	**90**	**100**	**75**	**80**	**85**	**110**	**120**	**140**	**110**	**120**	**130**	**140**	**160**	**180**	**140**	**150**	**160**	**180**	**200**	**180**	**190**	**210**
Extra, if fitted with Holman's Condenser and Blow-through Valve	£23	£24	£35	£35	£20	£27	£27	£38	£38	£50	£28	£28	£40	£40	£55	£55	£28	£40	£40	£55	£55	£45	£45	£56

Intending purchasers of Steam Pumps would do well to observe the great length of stroke, short steam cylinder, and short piston of the "Special" Steam Pump, as compared with the short stroke, long steam cylinder, and long pi the Pumps of other makers, as the efficiency and durability of the machine, and the space occupied by same, greatly depend upon this. The advantage of long strokes will be obvious when purchasers are reminded that each set of suctio delivery valves of a "Special" Steam Pump with 24 in. stroke, running at 120 ft. per minute, would open and close only 30 times per minute, as against 120 times per minute in a Pump with only 6 in. stroke performing same duty.

The "Special" Steam Pump can be worked by Compressed Air as well as by Steam.

HUNDREDS of these PUMPS are USED for HIGH LIFTS IN MINES, for which purpose they are made with 21, 24, 26, 28, 30, and 32-inch Steam Cylinders, and 36 48 and 72-inch St

The following Testimonial gives one Example of the Power Gained by the action of Holman's Patent Condensers:—

NORLEY COLLIERY, WIGAN.

Messrs. TANGYE BROTHERS AND HOLMAN.

GENTLEMEN,—I have great pleasure in recording my entire satisfaction with the working of the Holman's Patent Steam Pump Condenser which you have supplied to us. The complete condensation of the steam is, apart from its value in the strict economical sense, a most valuable feature in the drainage of underground workings. The perfect manner in which this important result is accomplished by your Condenser is extremely creditable to you, and merits the thanks and commendation of the Mining Engineer. When we start the "Special" Steam Pump the Condenser commences working automatically, and maintains a constant vacuum of 10¾ lbs. per square inch, even when we run the Pump upwards of 80 strokes (106 feet) per minute. It may perhaps be interesting to you to know that when we were running the Pump at 84 strokes (168 feet) per minute, the steam gauge indicating a steam pressure of 36 lbs. per square inch, 80 yards from and the Condenser vacuum gauge on the exhaust pipe indicating a ste of 21½ inches, I turned the exhaust steam from the Condenser into sphere, when the speed at once fell to 44 strokes per minute. T economy thus shown is really so great that the cost of the Condenser m in a very short time.

(Signed) J. THO

NORTH OF ENGLAND HOUSE ... ... TANGYE BROTHERS AND RAKE, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.
SOUTH WALES HOUSE... ... ... TANGYE BROTHERS AND STEEL. Tredegar Place. NEWPORT. Mon.; and Oxford Buildings, SWANSEA.

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors) at their offices, 26, FLEET STREET, E.C., where all communications are requested to be addressed.—*September 8, 1877.*